The Harveian Oration
ON
SCIENCE AND MODERN CIVILISATION.

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I.

MR. PRESIDENT AND GENTLEMEN,—We have met to-day to commemorate a great name and a great discovery. By his demonstration of the true motions of the heart and blood Harvey laid the foundation of animal physiology as a department of exact science. This work is memorable, not only from its historical relation to physiology and practical medicine, but perhaps still more so from its constituting the earliest example of the solution of a biological problem of the first rank by an orderly process of observation and experiment, conceived and carried out on the lines of modern scientific research. Harvey flourished at the dawn of exact science. Indeed, he was himself one of the heralds of that dawn which in our own time has broadened out into such marvellous day. And I propose, on our present anniversary, to consider Harvey's life and work, not so much as they concern our special studies, but as symbolising the commencement of a new era in human progress—the era of exact science—which in the present age is slowly but surely transfiguring the aspects and prospects of civilised society. I need not long detain you over the particulars of Harvey's life. He was the eldest son of an opulent Kentish yeoman,[1] and was born at Folkestone in 1578. Harvey passed his schoolboy days at the King's Grammar School in the pleasant city of Canterbury. Thence he migrated, at the age of sixteen years, to Caius College, Cambridge. Harvey spent some three years at the University, and graduated as Bachelor of Arts in 1597, just three hundred years ago. At the age of twenty years he proceeded to Padua to pursue his medical studies. At that period Padua was one of the foremost universities in Europe, and was especially famous as a school of anatomy. Harvey passed four years at Padua, and had for teachers the most celebrated anatomists of the day—namely, Fabricius of Aqua Pendente and Casserius—names which are still embalmed in our anatomical nomenclature. It was obviously of the greatest advantage to Harvey in view of his future work that his attention was thus early fixed on the solid data of descriptive anatomy, which could be directly verified by eye and hand in the dissecting room, rather than on the pedantic aphorisms and cloudy speculations which constituted so large a part of the medical learning of that time. At the end of his course of study at Padua he obtained the degree of Doctor of Medicine, and returned to England in 1603. In the same year he received his doctor's degree from the University of Cambridge. The young Harvey now settled in London, and entered on his professional career amid the most favourable surroundings for commanding success, whether as a fashionable physician or as a scientific investigator. He was in easy circumstances, and he had the prestige attaching to the highest education the time afforded. In his twenty-sixth year he married a daughter of Dr. Lancelot Brown, who had been physician to Queen Elizabeth. This alliance must have brought him in touch with the nobility and Court circles. In addition, he was endowed with a brilliant intellect, a sound character, good health, and indomitable industry. To crown all, he was inspired with an enduring passion for original research—a passion which persisted throughout his long life of close on eighty years. With these manifold advantages, intrinsic and extrinsic, it is not surprising that Harvey made rapid way. At the age of twenty-nine years he became a Fellow of this College; at thirty-one years of age he was elected physician to St. Bartholomew's Hospital; and at thirty-seven years of age he was chosen Lumleian Lecturer on Anatomy to the College of Physicians. About the same time he was appointed physician extraordinary to James I. and subsequently physician in ordinary to his successor, Charles I. These latter appointments gave Harvey command of the herds of deer in the Royal parks for the purpose of the vivisections and dissections which he practised in the course of his researches on the motions of the heart and blood, and in his investigations on animal generation and embryology.

Harvey delivered his first course of Lumleian lectures in 1616, when he was thirty-eight years of age. It was in these lectures that he first propounded his views concerning the motions of the heart and blood, and demonstrated before the Fellows of the College the anatomical and experimental evidence on which he based his conclusions. These demonstrations were, as he tells us, annually repeated at the Lumleian lectures for nine or ten successive years, no doubt with ampler and ampler proof of the truth of the new doctrine of the circulation of the blood. It was only after this long and searching probation that Harvey ventured to give his discoveries to the world. This he did in the form of a little treatise printed at Frankfort in the year 1628. Before proceeding to analyse this remarkable work I will conclude what I have to say, and very briefly, concerning the other work and the rest of the life of Harvey. After the publication of his treatise on the circulation Harvey seems to have concentrated himself, as regards physiological work, on his investigations concerning the generation of animals. He bestowed long years and an immense amount of labour on this subject. Over and over again he minutely dissected the organs of generation in various kinds of animals. He watched with patient observation the slow growth of the embryo, from its earliest inception to its full maturity and birth. In this way he gradually accumulated an enormous mass of information which he embodied in fragmentary disquisitions, composed apparently at irregular intervals, as leisure and work permitted. These disquisitions were eventually collected together and printed towards the close of Harvey's life in a separate volume under the supervision of his friend, Sir George Ent, with the title of "Exercitationes de Generatione Animalium." This work, though many times larger than the treatise on the motions of the heart and blood, is incomparably less satisfying and conclusive. To the modern reader of these disquisitions the reason of their shortcomings is plain enough. Harvey was stopped—and stopped absolutely—at every critical point by his want of a larger magnifying power. He had at his disposal only a pocket lens, which magnified perhaps four diameters. The ovum must have appeared to him as a structureless mass of material, and the seminal discharge as a homogeneous fluid. He knew nothing, and could know nothing, of the cellular elements of the ovum, or of the motile filaments which constitute the "vital spark" of the spermatic fluid.

The later years of Harvey's life were passed in peaceful retirement. The civil troubles of the time had broken up his household and scattered his patients, but had left his private fortune unimpaired. At the age of sixty-eight years he relinquished his appointments and practice, and went to reside with one or other of his brothers, who were wealthy London merchants. He still continued the studies he loved so well, and maintained his interest in the College of Physicians. Sir George Ent gives us a touching glimpse of him as he appeared in his seventy-third year at the house of his brother Daniel at Combe. "I found him," says Sir George Ent, "with a cheerful and sprightly countenance, investigating, like Democritus, the nature of things. Asking if all were well with him, 'How can that be,' he replied, 'when the State is so agitated with storms and I myself am yet in the open sea? And, indeed, were not my mind solaced by my studies and the recollection of the observations I have formerly made, there is nothing which should make me desirous of a longer continuance. But thus employed this obscure life and vacation from public cares, which would disgust other minds, is the medicine of mine.'" Harvey had the satisfaction of living to see his great discovery of the circulation of the blood generally accepted as true. In his old age he was known and honoured throughout the learned world. The College of Physicians erected a statue in his honour. In his seventy-sixth year he was

[1] In those days the yeomen of Kent were persons of consideration. There is an old rhyme which runs:—

A knight of Cales,
A squire of Wales,
And a laird of the North countree;
A yeoman of Kent
With his yearly rent
Will buy them up all three.

elected President of the College, but declined the honour on the plea of the infirmities of age. He accepted, however, the office of councillor, which he held for two years. He enriched the College with many gifts; he furnished the library with books, and filled the museum with "simples and rarities," as well as with specimens of instruments used in surgery and obstetrics. Finally, in the year preceding his death, Harvey made a transfer to the College of his paternal estate of Burmarsh, in Kent. In the deed of gift conveying this property to the College there is provision for a salary to the College librarian and for the endowment of this annual oration. The orator is directed to exhort the Fellows "to search out and study the secrets of nature by way of experiment, and also for the honour of the profession to continue mutual love and affection among themselves." This double injunction of our venerated saint and apostle has, I venture to believe, been fairly observed according to the measure of their abilities by successive generations of the Fellows of this College even to the present day. Harvey made a peaceful ending in his eightieth year, and was buried full of years and honour in his brother Eliab's vault in the parish church of Hempstead, near Saffron Walden, in Essex. Seventeen years ago, on Oct. 18th, 1883, by the piety of this College, his remains were removed from the dilapidated vault, and, with befitting solemnity reinterred in a marble sarcophagus in the Harvey Chapel attached to the same church.

Harvey's activity as an investigator ranged over a wide field, but his fame as a discoverer and his rank in the hierarchy of science must always depend on his researches on the motions of the heart and blood. These researches were published in 1628 in the form of a small Latin quarto of only seventy-six pages. This little volume embodies the results of some twenty years' work, carried on during Harvey's prime, when his inventiveness and receptivity were at their highest. The book is in several respects a remarkable one. It presents to us the earliest record we possess of a really scientific investigation in the domain of biology, based on observation and experiment. Although written 270 years ago, the work is essentially modern in tone and method. It is, in fact, the prototype of the scientific "paper" or "monograph" of our own day; and for clearness of demonstration and conclusiveness of proof stands favourable comparison with the most renowned masterpieces of recent times. Harvey begins with an account of the state of knowledge on his subject at the time he wrote. He describes the confusion and contradiction reigning in men's minds concerning the actions and offices of the heart and the movements of the blood. He then sets forth in a series of chapters the dissections, vivisections, observations, experiments, and reasoning by which he proved that the blood flows in a continuous stream along its now well-known route. He shows that the motor power for the movement of the blood resides in the heart, that the heart is a muscular organ, and that the auricles and ventricles are hollow muscles which contract in action and forcibly expel their contents. He demonstrates that the disposition of the valves within the heart, and at the roots of the aorta and pulmonary artery and along the veins, is such that the blood expelled by the contractions of the heart must of necessity flow onward in the direction indicated, and that any reflux in a contrary direction is a mechanical impossibility. He argues that the blood-stream must be continuous throughout its whole course, because, wherever you tap the channel, whether in an artery or in a vein, the whole of the blood contained in the body is drained away in a few minutes. He fortifies his argument by a number of collateral proofs, all converging and pointing to the same unavoidable conclusion. Especially ingenious and original is the following argument, which has a curiously modern ring about it. If you estimate the charge of blood delivered into the arteries at each stroke of the ventricle at one or two drachms, and calculate the rate at which the heart is beating at from 60 to 70 per minute, you arrive at a volume of blood passing through the heart in the course of every half-hour which is greater than the aggregate ingesta of a whole day, and greater than the total sum of blood contained in the body. The infererence is therefore irresistible that the whole of the blood, and the same blood, must be incessantly passing and revolving through the heart. Harvey was much exercised as to the precise way in which the blood found its way from the terminal arteries to the commencing veins. He had absolute proof before him that it did somehow find its way, but how? He was able, by minute dissection of the organs and tissues, to satisfy himself that it was not, as some of his contemporaries supposed, by coarse anastomosis between the arteries and veins. "I have myself," he tells us, "pursued this subject of the anastomosis with all the diligence I could command, and have given not a little both of time and labour to the inquiry; but I have never succeeded in tracing any connexion between arteries and veins by a direct anastomosis of their orifices. Neither in the liver, spleen, lungs, kidneys, nor any other viscus is such a thing as anastomosis to be seen; and by boiling I have rendered the whole parenchyma of these organs so friable that it could be shaken like dust from the fibres, or picked away with a needle, until I could trace the fibres of every subdivision and see every capillary filament distinctly."[2] Harvey with his simple lens could not detect the delicate capillary network which united the minute arteries and veins into a closed vascular system; and he was reduced to the conjecture that the blood percolated the organs and tissues as water percolates the earth and produces springs and rivulets. It is almost pathetic to contemplate this eager, earnest inquirer, looking with wistful, straining eyes for the communicating channel which he knew must exist, but could not see, and to remember that the solution of the puzzle was almost within his grasp; for hardly had he closed his eyes than the improvements in the microscope enabled Malpighi and Leeuenhoek to demonstrate the completion of the circuit of the blood through the capillaries in the web of the frog's foot. It is singular that Harvey in all his writings nowhere betrays any consciousness of his sore want of a higher magnifying power. He did not, apparently, divine that it was possible to enlarge objects beyond the power of the common lens which had been in use from antiquity, yet it was precisely this want which foiled him at almost every step in the prosecution of the studies to which he devoted his life.

When Harvey was entering on his career as an investigator, in the early years of the seventeenth century, the great movement of the Renaissance had produced its full effects. Starting in Italy in the fourteenth century, it spread during the fifteenth and sixteenth centuries and permeated the rising nationalities of Western Europe. It was through the zeal engendered by this movement that the priceless literary and artistic treasures of Greece and Rome were rescued from oblivion and made the secure heritage of all time. The study of those monuments of ancient genius and the inspiration communicated by them, saved mediæval Europe from barbarism and created a new civilisation not inferior in polish to that of the classical ages. Upon literature and the fine arts the spirit of the Renaissance reacted with the happiest possible effects. It inspired the masterpieces of poetry, painting, architecture, and sculpture, which constitute the glory of the fifteenth and sixteenth centuries, and compel the admiration and challenge the rivalry of the nineteenth century. But as regards natural knowledge the influence of the Renaissance was at the first, and even for a long time, distinctly unfavourable. The writings of Hippocrates, Aristotle, Ptolemy, Galen, and other masters were studied and searched, not for inspiration to new inquiry and higher development—but these great names were erected into sacrosanct authorities, beyond whose teaching it was vain, and even impious, to seek to penetrate. The result of this perversion was that the pursuit of natural knowledge degenerated into sterile disputations over the words of the masters. This numbing despotism of authority comatosed the intellect of Europe during many generations. It received the first rude shocks from the discoveries of the great anatomists of the sixteenth century; and it was finally overthrown by the force of the demonstrations of Galileo and Harvey—powerfully aided, no doubt, by the philosophical writings of Bacon and Descartes. These four men—Galileo, Harvey, Bacon, and Descartes—were the dominating spirits of their epoch in the sphere of natural knowledge; they were contemporaries; and three of them must have had more or less personal acquaintance with each other. Harvey was Bacon's friend and physician; and we can easily believe that much talk went on between the investigator and philosopher concerning the studies in which they were mutually interested, and that Bacon imbibed his enlightened notions respecting the importance of experiments in the pursuit of knowledge from the precepts and practice of Harvey. It does

[2] Works, p. 103.

not appear that Descartes was personally known to Harvey, but he was one of the earliest to accept the doctrine of the circulation and to write in its defence. When Harvey was a student at Padua Galileo occupied the chair of mathematics in that university. These two men take rank as the twin founders of modern science—the one in the domain of biology and the other in the domain of physics. Their lives largely overlapped; they were contemporaries for sixty-four years, and both nearly reached the patriarchal age of fourscore. Roughly speaking, their period of activity covered the first half of the seventeenth century. They were, each in his respective department, pioneers in the method of searching out the secrets of nature by observation and experiment, and in proclaiming the paramount necessity of relying on the evidence of the senses as against the dicta of authority.

II.

The present year is the 300th anniversary of Harvey's graduation at Cambridge and of the commencement of his career as a student and investigator of nature. That date (1597) corresponds roughly with the birth-time of modern science. The occasion is therefore not inappropriate for a survey of the changes impressed upon civilised society by science—after three centuries of expansion and growth. The lapse of time is sufficiently long and the advance made is sufficiently great to enable us to estimate approximately the scope and strength of this new factor in our environment, and perhaps even to appreciate the influence which the cultivation of science is likely to have on the future of modern civilisation. All the older civilisations have issued either in extinction or in permanent stagnation. The civilisations of Egypt and Chaldea and of Greece and Rome, after a phase of progressive decline, eventually perished by military conquest. The ancient civilisations of the Far East—those of India and China—still persist, and have a semblance of life, but it is a life of helpless torpor and immobility. Is our modern civilisation doomed to share a kindred fate? There are, I think, good reasons for believing that in this respect history will *not* repeat itself. Special features are observable, and special forces are at work, in contemporary civilisation which differentiate it profoundly from all its predecessors. It may be said, broadly, that the older civilisations rested essentially upon art and literature (including philosophy), and that modern civilisation rests in addition upon science and all that science brings in its train. This distinction is, I think, fundamental, and connotes a radical difference as regards stability and continuance between ancient and modern society. A comparison of the mode of growth of the fine arts and literature on the one hand, with the mode of growth of science and its dependent useful and industrial arts on the other, brings out this point very clearly. The evolution of literature and art displays the following well-marked characteristics. Starting from some rude beginnings, each branch of literature and each branch of the fine arts grows by a succession of improved ideals until a certain culminating level of excellence (or phase of maturity) is attained. When this level is reached no further growth takes place, nor even seems possible. When and after this summit level of excellence is achieved, all subsequent expansion, if any, is quantitative rather than qualitative, and consists in modifications, variations, repetitions, and imitations, but without any real advance in artistic and literary excellence. It may be further noted that there is observable in the past annals of literature and the fine arts a fatal tendency to a downward movement. The variations are apt to show meretricious qualities, which indicate, in the judgment of critics, a degradation from the high standard of the earlier masters. The life of each of the fine arts seems, as Professor Courthope has expressed it, to resemble the life of an individual in having periods of infancy, maturity, and decline. The witness of history bears out this view.

It is almost startling to consider how long ago it is since most branches of art and literature had already reached their highest known pitch of excellence. The Homeric poems are supposed to have been composed a thousand years before the Christian era, and no one doubts that as examples of epic poetry they still stand in the front rank. In the fourth and fifth centuries B.C. there occurred in Greece an extraordinary outburst of artistic and literary genius, such perhaps as the world has never seen before or since. During this epoch sculpture was represented by Phidias and Praxiteles, architecture by the builders of the Parthenon, painting by Apelles and Zeuxis, dramatic poetry by Sophocles, Euripides, and Aristophanes, and speculative philosophy by Plato and Aristotle. Greece maintained her political independence for two centuries after this period; but she did not produce anything superior or apparently even equal to the masterpieces of this golden age. A parallel sequence is observable in the history of ancient Rome. Art, literature, and philosophy, and all studies that may be grouped under these headings, attained their culmination in the Augustan age; and no advance thereupon took place, but rather a falling-off during the subsequent centuries of Imperial Rome's political existence. If we turn our eyes to the far east we see that the masterpieces of architecture and ornamental metal work and of poetic and philosophical literature are all old—many of them very old. Neither in India nor China nor in any other far eastern country are there any indications of advance for many centuries in the domain of artistic and literary culture. The history of Western Europe tells a similar tale. The finest examples of Gothic and Norman architecture date from the twelfth and thirteenth centuries. Painting culminated in Italy during the fifteenth and sixteenth centuries with Raphael, Da Vinci, Correggio, Titian, and Paul Veronese. The same art reached its highest level in the low countries with Rembrandt and Rubens, in Spain with Velasquez and Murillo, in France with Claude Lorraine and Poussin—all artists who flourished in the seventeenth century. In England nothing greater than the works of Reynolds, Gainsborough, and Turner have been produced by later artists. Similarly with literature: most of the masterpieces belong to a past age. Italy can show no higher examples of poetry than the creations of Dante, Petrarch, Tasso, and Ariosto. The most ardent admirers of the Victorian poets would scarcely contend that any of them stand on a higher pedestal than Shakespeare and Milton; nor would any German critic claim equality for any recent poet of the Fatherland with Goethe and Schiller. In the delightful art of music the masterpieces of Haydn, Handel, and Mozart, judging by their popularity at the present day, are not surpassed by the works of any of the later musical composers.

I need not pursue the subject in greater detail. Wherever we look—in all ages, among all peoples—we encounter the same story with regard to that large and varied and most precious outcome of the human mind which may be grouped under the categories of the fine arts and literature. There is a history of improvement and growth up to a certain culmination or phase of maturity. Beyond that point no further growth seems possible, but rather, instead, a tendency to decline and decadence.[3] The evolution of science differs fundamentally from that of literature and the fine arts. Science advances by a succession of discoveries. Each discovery constitutes a permanent addition to natural knowledge and furnishes a post of vantage for, and a suggestion to, further discoveries. This mode of advance has no assignable limits, for the phenomena of nature—the material upon which science works—are practically infinite in extent and complexity. Moreover, science creates while it investigates; it creates new chemical compounds, new conditions of substances, and strange new environments such as do not exist at all on the earth's surface in primitive nature. These "new natures," as Bacon would have called them, open out endless vistas of lines of future research. The prospects of the scientific inquirer are therefore bounded by no horizon; and no man can tell, or even in the least conjecture, what ultimate issues he may reach. The difference here indicated between the growth of art and literature and the growth of science is, of course, inherent in the subjects and is not difficult to explain. The creation of an artist, whether in art or literature, is the expression and embodiment of the artist's own mind, and remains always in some mystic fashion part and parcel of his personality. But a scientific discovery stands detached, and has only a historical relation to the investigator. The work of an artist is mainly subjective—the work of a scientific inquirer is mainly objective. When and after a branch of art has reached its period of maturity the pupil of a master

[3] If we take a wider view of the constituent elements of organised society, and embrace in our consideration the religious systems, the political and civil institutions, the military organisations, the commerce, and the miscellaneous disconnected mass of natural knowledge existing in the older civilisations, we look in vain for any constituent which had more than a limited scope of expansion and was not subject to decay.

in that art cannot start where his master ended and make advances upon his work; he is fortunate if at the end of his career he can reach his level. But the pupil of a scientific discoverer starts where his master left off, and even though of inferior capacity can build upon his foundations and pass beyond him. It would seem as if no real advance in art and literature were possible except on the assumption that there shall occur an enlargement of the artistic and literary faculty of the human mind. No such assumption is required to explain and render possible the continuous advance of science. The discoverer of to-day need not be more highly endowed than the discoverer of a hundred years ago, but he is able to reach further and higher because he stands on a more advanced and elevated platform built up by his predecessors.

III.

The fatal weakness of previous civilisations lay in the absence of any element which had inherent in it the potentiality of continuous growth and unlimited expansion, and this is precisely what exact science supplies to modern civilisation. A sharp distinction must be drawn between the so-called science of antiquity and the science of to-day. The ancients had a large acquaintance with the phenomena of nature and were the masters of many inventions. They knew how to extract the common metals from their ores, they made glass; they were skilled agriculturists; they could bake, brew, and make wine, manufacture butter and cheese, spin, weave, and dye cloth; they had marked the motions of the heavenly bodies and kept accurate record of time and seasons; they used the wheel, pulley, and lever, and knew a good deal of the natural history of plants and animals and of anatomy and practical medicine. This store of information had been slowly acquired in the course of ages, mostly through haphazard discovery and chance observation, and formed a body of knowledge of inestimable value for the necessities, conveniences, and embellishments of life. But it was not science in the modern sense of the word.[4] None of this knowledge was systematised and interpreted by coördinating principles or illuminated by generalisations which might serve as incentives and guides to further acquisitions. Such knowledge had no innate spring of growth; it could only increase, if at all, by casual additions, as a loose heap of stones might increase, and much of it was liable at any time to be swept away into oblivion by the flood of barbaric conquest. It is quite obvious, from the subsequent course of events, that there came into the world of natural knowledge about three centuries ago, in the time of Galileo and Harvey, a something—a movement, an impulse, a spirit—which was distinctly new—which Bacon, with prophetic insight, termed a "new birth of time." This remarkable movement did not originate with any startling revelation; it consisted rather in an altered mental attitude and a method. There arose a distrust in the dicta of authority and an increasing reliance on ascertained facts. These latter came to be regarded as the true and only data upon which natural knowledge could be securely founded and built up. Doubt and question took the place of false certainty. The hidden meaning of phenomena was sought out by observing them under artificially varied conditions or, to use the words of Harvey, "the secrets of nature were searched out and studied by way of experiment." *A priori* reasoning from mere assumptions, or from a few loosely observed facts fell into discredit. Observations were repeated and made more numerous and more exact. These were linked together with more rigid reasoning to stringent inductions. Hypotheses (or generalisations) were subjected to verification by experiment, and their validity was further tested by their efficacy in interpreting cognate problems and by their power to serve as guides to the acquisition of fresh knowledge. Instruments of precision were devised for more accurate observation of facts and phenomena—for weighing and measuring, for estimating degrees of temperature, the pressure of gases, the weight of the atmosphere, and for recording time. The sense of sight was aided by means of the telescope and microscope. The invention of instruments and appliances for assisting research was an essential and invaluable feature of the "new philosophy." It is singular that so little progress in this direction was made by the quick-witted Greeks of the classical period; and their neglect or incapacity in this respect largely accounts for their conspicuous failure in science as contrasted with their brilliant success in art and literature.[5]

IV.

The new method soon began to yield fruit—at first slowly, then more and more rapidly as the workers increased in number and the method was more fully understood. Discoveries were no longer solely stumbled on accidentally, but gathered in as the fruit of systematic observation and purposive research. It is not necessary for me, even if I had the time and ability, to trace the history of scientific discovery from the time of Harvey onward. I will only mention a few particulars by way of illustration. You all know how, as time passed on and knowledge expanded, the primary sciences became divided into separate departments for more minute study; how new sciences have arisen, some of which have now grown to vast proportions; show improved instruments and appliances of infinite delicacy have been invented to aid research; and how, in the present age, the gains of pure science have been turned to innumerable channels of practical utility. The advances made in physics and mechanics during the seventeenth and eighteenth centuries prepared the way for the invention and perfection of the steam-engine in the nineteenth century. The introduction of the steam-engine increased at a bound the power of the human arm many fold.[6] Through its instrumentality the land has been covered with railways and the sea with ocean steamers. Electrical science has given us the telegraph and telephone, a new illuminant, and a new motor. The steam printing-press, the telegraph, and the railway together, have made it possible to produce that perhaps most wonderful of all the indirect outcomes of the growth of science—the modern newspaper. The great science of chemistry has revealed the composition of the material world; has originated vast industries, which give work and wages to millions of the population; and has placed all kinds of manufacturing processes upon a basis of scientific precision. Under cover of chemistry have sprung up the sub sciences of photography and spectroscopy, which have given a new and unexpected development to our knowledge of the heavenly bodies. The revelations of palæontology and embryology have led to the establishment on a firm basis of the theory of organic evolution. This theory—by far the most penetrating generalisation of our time—has not only thrown a flood of light upon the deepest problems of natural history, but has also revolutionised the whole domain of speculative thought. Physiology and practical medicine have profited immensely by the general advance of the sister sciences and by the adoption of scientific methods in the prosecution of research. Optical science gave birth to the achromatic microscope. The microscope has laid bare the minute structure of plants and animals and introduced zoologists and botanists to a vast sub-kingdom of minute forms of life previously undreamed of. The microscope, also, in conjunction with chemistry, founded the new science of bacteriology. Bacteriology has inspired the beneficent practice of antiseptic surgery; it has also discovered to us the parasitic nature of zymotic diseases, and opened out a

[4] "It is not a collection of miscellaneous, unconnected, unarranged knowledge that can be considered as constituting science."—WHEWELL.

[5] Whewell observes (History of the Inductive Sciences, vol. i., book 1, chap. iii.): "The Aristotelian physics cannot be considered as otherwise than a complete failure. It collected no general laws from facts; and consequently, when it tried to explain facts it had no principles which were of any avail." Whewell argues that this failure was not due to the neglect of facts. He goes on to say: "It may excite surprise to find that Aristotle and other ancient philosophers not only asserted in the most pointed manner that all our knowledge must begin from experience, but also stated in language much resembling the habitual phraseology of the most modern schools of philosophising, that particular facts must be *collected*; that from these general principles must be obtained by *induction*; and that these principles, when of the most general kind, are *axioms*." Then he quotes passages in proof from Aristotle's writings. It is, however, pretty evident that Aristotle's reverence for facts was no more than a pious opinion, which he habitually ignored in the actual handling of questions of natural knowledge. His treatise "On the Parts of Animals" bristles with errors of observation which a very moderate amount of painstaking would have rectified. Had the ancient Greeks and their successors in the middle ages been more accurate observers of facts, and had they sought for and invented instruments for the more exact observation of facts, they would not have so conspicuously failed to establish at least the foundations of exact science. The historian of the inductive sciences, however, will have it otherwise. He sums up his argument thus: "The defect was that although they had in their possession facts and ideas, the ideas were not distinct and appropriate to the facts." Is it not rather the case that the "ideas were not distinct and appropriate to the facts," precisely because the "facts" were indistinctly seen and imperfectly apprehended?

[6] Mr. Mulhall calculates that "our steam-power in the United Kingdom is equal to the force of 169,000,000 able-bodied men—a number greater than the whole population of Europe could supply."—"National Progress during the Queen's Reign," p. 22.

fair prospect of ultimate deliverance from their ravages. Thus have the several sciences advanced, and are still advancing in concert step on step, by mutual help, at an ever-increasing speed—pushed on by that irrepressible forward impulse which has characterised the scientific movement from its inception. This movement has now become the dominant factor in civilisation.

There is no doubt that under the reign of science a striking amelioration in the state of society has taken place. The mass of the people are better housed and fed, and, above all, better educated. Their sanitary surroundings are improved and the death-rate has fallen. Crime and pauperism have diminished, and there is greater security for person and property. The amenities and enjoyments of life are on the increase, and the average scale of comfort is markedly raised. Moreover, this amendment is not confined to the material and physical well-being of the population. There is some evidence that the complex of conditions we term "modern civilisation" is acting favourably in the direction of making people more reasonable and better conducted. Peace is now the normal condition between civilised states; and there is a growing trend of opinion in favour of settling international differences by the more rational method of arbitration rather than by war. Political morality approximates more nearly to that recognised as proper in private life. The duel has almost been laughed out of court. Industrial quarrels are conducted with more order; there is an appeal to facts and reason on both sides, and more readiness to adjustment by compromise. The whole environment of modern life seems in several ways calculated to foster habits of correct thinking and acting. The inclusion of science in the scope of general education is a very important innovation. This extends the range of subjects in regard to which precise reasoning is possible; and tends to promote the application of scientific modes of thinking and reasoning to all the problems of life. We may be quite sure that exact thinking leads in the main to correct conduct; an evil deed is not only a crime, but also a blunder. The periodical press must, one would think, be a good training school for thinking and reasoning. The discussion of all sorts of questions in its columns can scarcely fail to have an educating effect. The disputants must perforce read one another's arguments and be, consciously or unconsciously, influenced thereby. It may be assumed, or at least hoped, that there is in arguments, as in organic forms, a tendency to the survival of the fittest, and that in the long run the better argument carries the day. The blaze of publicity amid which we live through the ubiquitous newspaper lends an additional motive to right-doing. The "fierce light which beats upon a throne" beats nowadays also upon the citizens, and doubtless helps to keep them in the straight path.

But, say the prophets of evil: "This will not endure; modern civilisation, based on science, will in time go the way of all its predecessors, and end in extinction or in decay and stagnation." It is proverbially unsafe to dogmatise about the future; and in all human affairs, even those termed scientific, there is nothing so certain as the unexpected. This, however, may be affirmed: that if modern civilisation is to come to an end it will not perish in the same way or from the same causes as previous civilisations. One of the standing perils of civilised communities in ancient times was the risk of being subjugated by less civilised neighbours or of being overwhelmed by hordes of barbarian invaders. This danger no longer threatens us. Power has passed for ever into the hands of the nations which cultivate science and invent. The appliances of war are now placed on a scientific basis; and the issue of battle is decided in the laboratories of the engineer and chemist. The late C. H. Pearson argued that the dark and yellow races, in virtue of their greater number and fecundity, might in time come to dispute the supremacy of the white races—that they would learn the drill and copy the armaments of European armies, and thus equipped would be able by their superior mass to hem in and curb, if not to subjugate, the western nations. But the march of science and invention never stops; and it is inconceivable that the scientific nations shall not always be many stages in advance of the unscientific nations in the destructiveness of their weapons and the perfection of their military equipments, and this would give them an advantage which scarcely any disparity of numbers could neutralise. The "yellow terror" can never be more than a phantom until these races begin to show capacity for scientific discovery and the further (and somewhat different) capacity for turning their discoveries to practical uses.

Against the more insidious peril of decay and stagnation the scientific movement seems also to offer effective safeguards. We sometimes hear complaints of the hurry and bustle—the stress and strain—of modern life: this unrest may incommode individuals—but it is the antiseptic of society. Probably the deadliest predisposing factor in the decline of former civilisations was the mental inanition arising from deficiency of fresh and varied intellectual pabulum. Physiological analogies lead us to the inference that an idle brain, like an idle muscle or an idle gland or nerve, would deteriorate in function; and, conversely, that a well-exercised brain would tend to reach its possible best. I conceive that our forefathers and the ancients, for the most part, led somewhat monotonous lives. They had but little fresh and varied food for thought. The generality could not, for lack of "news," take a sustained interest in the course of public events. The world of science was an unopened book. Intercommunication was slow and difficult, and the whole current of existence flowed sluggishly. Contrast this with the vivid abounding life of the present day. Veins of interest are greatly multiplied to meet and satisfy the infinitely varied individual aptitudes of men and women. A considerable number of persons of both sexes now busy themselves, either as amateurs or something more, with the study of some branch of science or natural history. Those whose bent is to politics, art, letters, sport, or fashion find in the daily newspaper and the periodical press an unfailing fresh supply of the mental food they love. Business and pleasure are carried on with a briskness formerly unknown, and the pulse of national life is quickened through every part. It seems impossible that decay should invade the body politic while such conditions of all-pervading activity prevail, and there is no valid reason why these conditions should not continue to prevail. It has often been remarked that periods of national upheaval, when men's minds are deeply stirred—like the rise of Islam, the Protestant Reformation, and the French Revolution—were exceptionally prolific of able men. It does not appear altogether unreasonable to suppose that the stir and movement of modern life may be similarly favourable to the production of "men of light and leading" for the service of the community. The proximate cause of the downfall of states seems always to have been a defective supply of strong and capable men at the head of affairs and in positions of trust. The *dolce far niente* is not conducive to the formation of strong characters, and those who sigh and yearn for social quietism may find comfort in the reflection that the hum and buzz which disturbs them is a sure token of the health and strength of the common hive.

Gentlemen, it is given to few to deliver a stroke of work like that of Harvey; but many of those before me have done something, and some a great deal, to forward the beneficent march of science. To lift the veil from even the smallest corner of the unknown in nature is not only a pure delight, but is surely also doing a service in the cause of humanity. We are here to-day all disciples of Harvey—paying willing homage to his great name; and though we cannot pretend to his genius we can all of us take to heart the lesson of his life and seek to emulate his gentleness, his patient industry, his single-minded devotion to a high purpose, and his unswerving loyalty to truth.

MIDLAND MEDICAL SOCIETY.—The annual meeting of this society was held in the Medical Institute, Birmingham, on Oct. 13th, the President (Dr. Alfred Carter) being in the chair. Mr. J. W. Taylor was unanimously elected President for the ensuing year. The report of the council and the treasurer's report were received and adopted. It was resolved to add £10 to the deposit account. Votes of thanks were passed to the retiring President (Dr. Carter), the treasurer (Mr. Garner), the retiring secretary (Mr. Heaton), and the auditors (Mr. Marsh and Mr. Haynes) for their valuable services during the past year. Mr. John Garner was re-elected treasurer, Dr. Kauffmann and Mr. Christopher Martin were appointed secretaries, and Mr. Marsh and Mr. Haynes auditors for the ensuing year. The following gentleman were elected to fill the vacancies on the council: Mr. Eales, Mr. Barling, Dr. Foxwell, Mr. Marsh, and Mr. Heaton. Mr. Greenwood and Mr. Wood were elected members of the society.

Address
ON
SOME RELATIONSHIPS OF INDIGESTION.

Being the First Hunterian Society's Lecture for the Session 1897-98, delivered on Oct. 13th, 1897,

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GENTLEMEN,—In the living organism with its complexity of structure and intimate interaction of functional manifestations it is difficult, if not impossible, to conceive that when disease is established in one tissue or organ, however localised and however slight in degree, it can continue without producing some effect—some perversion both of structure and function in adjacent and associated parts. A morbid condition, in short, occurring in any region becomes thereby a disturbing factor in the environment of the surrounding area in which it tends to determine a secondary complication. The nature and severity of this latter will depend in great part upon the nature and extent of the primary disease as well as on the relationship, structural and functional, that may exist between the original seat of the mischief and the part secondarily involved. I have ventured to think that I might not unprofitably employ the hour that the courtesy of your committee has placed at my disposal in bringing before you some of the relationships which perversions of the digestive function bear to the organism as a whole, not only as regards the various precedent or causal conditions of such perversions, but also the disturbances which they in turn give rise to in parts remote from those primarily at fault. It appears to me that considerations such as these are essential to the proper understanding of the protean symptoms of dyspepsia, and for want of them, or of others similar, much confusion exists in the intelligent observance of the manifestations of indigestion and in their systematic investigation, as well as in formulating a rational and successful plan of treatment in place of the empirical and haphazard therapeutics which so largely prevail in this department of practical medicine.

The digestive organs, strictly speaking, are those concerned with the preparation of the ingesta, both solid and liquid, in such manner as may fit them for absorption into the blood current either directly or *viâ* the lymphatic channels. They consist of a canal many feet in length, suitably provided with means for the sub-division, mixing, and propulsion of the contents; and associated glands, some of which are in the thickness of the walls of the canal, others—as liver, pancreas, and salivary glands—at some distance from the tube, with which they communicate by ducts. Structurally the tract consists of a lining of mucous membrane, the epithelium of which presents the microscopic characters—spheroidal, columnar, and squamous—associated with glandular, absorbent, and merely protective functions. External to this membrane, in which the blood and lymph capillaries are disposed for the most part in a meshwork of adenoid tissue, is an arrangement of contractile muscular tissue so arranged as to effect the complex movements of mastication, deglutition, and gastro-intestinal peristalsis. The entire serous coat of the stomach and intestines takes no part that I am aware of in the digestive process proper. Genetically the epithelium of the canal with its associated glands, except that lining the cavity of the mouth, is derived from the hypoblast, whilst the connective tissue, muscular and serous coats with the bloodvessels and lymphatics are developed from the mesoblast, as the nerves are epiblastic in origin. The process of digestion—i.e., the reduction of the food to a diffusible state—is effected by the chemical agencies of certain acid and alkaline secretions, together with the ferment action of bodies whose nature is very imperfectly known, such as ptyalin, pepsin, trypsin; and supplementary to these changes, but as shown to be by no means essential to efficient digestion, are various disintegrations and decompositions brought about—at least in the intestinal contents—by the action of micro-organisms which have obtained entrance with the food and air that have been swallowed. Although carried out in different sections of the alimentary canal under the all-important influence of the body heat, the function of digestion is, to all intents so far as the actual body tissues are concerned, performed outside the body, and in respect to many articles of food is a continuation of the preliminary changes effected in the course of cooking. I have no need to enter into a detailed account of the specific action of the several digestive secretions which differ among themselves in the conditions needful for their activity, in the rapidity with which they produce their results, and in their relative importance to the efficient performance of the function. But there are several considerations of a general character upon which stress must be laid. It is all-important to remember that these secretions act upon the ingesta successively—that is, each one not only effects certain changes in one or more of the alimentary principles, rendering it more or less diffusible, but also determines other changes which are needful to the efficient action of the secretions which subsequently mingle with the food. Carried out in a progressive series of stages, each stage is marked by its own specific share in the process of digestion, and each contributes in some degree to the proper performance of those which follow. Disturbance of one, therefore, not only produces a direct effect, but indirectly affects those which come after.

A circumstance which confers a distinctive peculiarity upon the digestive function and characterises in no small degree its imperfection, is that there are special organs subject to the same kinds of structural disease as are other parts of the body, and there is also, to some extent independent of these organs, a material undergoing complex chemical changes. It is the existence of these two factors—organs and material—which has to be recognised in all questions connected with digestion, and to a certain degree to be considered separately as well as in combination. Comparison with the other nutritive functions shows nothing such as obtains in digestion. In respiration, e.g., noxious gases may be inhaled, but none are formed in the lungs; though poisonous bodies may be excreted by the kidneys they are not absorbed by those organs, and the same is probably true as regards the skin.

It is well with the purpose we have in view clearly to limit our conception of digestion to the conversion of the ingesta into a diffusible state. The further process by which the digesta are absorbed, intimately associated as it is with digestion proper on the one hand and with the circulation of the blood and lymph on the other, is nevertheless a different function and is carried out in its own peculiar way. And it is also desirable not to allow the nutritious character of the food taken to be confounded with its digestibility. The two qualities are not co-terminous. Many exceedingly nutritious—i.e., of value in the production of tissue or energy in the economy—substances require much digestion, whilst others demanding but a minimum of change to allow of their absorption may nevertheless be most harmful. How far in the course of the true digestive process the various aliments, in addition to those modifications in construction which render them diffusible, also enter on the path of those requisite alterations (anabolic or synthetic) which fit them ultimately for protoplasmic formation, having regard to the reconversion of some of the absorbed products to the form in which they were originally submitted to digestion, is a question that cannot be entered on here; but it would seem likely that some of these constructive changes do take place in the intestinal mucous membrane, and still more probably in the liver. Under healthy circumstances the successive stages of this complicated function are performed—except so far as the ingestion, mastication, and deglutition of the food and the evacuation of the egesta are concerned—without giving rise to any conscious sensation. But this state of health assumes a suitable dietary, a structural integrity of the organs concerned, an adequate vascular supply, and a normal nervous control. Improprieties or disturbances of one or other of these fundamental conditions determine imperfections in the digestive process, severe or slight, lasting or transient, and establish indigestion or dyspepsia.

In the whole category of terms used in the description of diseased states it may be safely affirmed that none are employed with less precision than are these synonyms. Scarcely two persons, lay or professional, attach to them the same meaning, and the conditions they are supposed to denote are the most diverse. This unfortunate vagueness of language commonly expresses a corresponding vagueness of idea, and a subject that is intrinsically difficult and uncertain is made more so by this lack of exactness in

language. It is difficult, no doubt, to be precise in the use of words the full significance of which is frequently changing with advances in knowledge or an altered point of view; but some attempt at consistency should be made and some common agreement arrived at which should prevent one authority applying the words to the failure in the digestive process restricted perhaps to one particular phase, and another of equal weight implying by them the symptoms which such failure may give rise to. Much of the difficulty would be removed by a preliminary definition of terms and a consistent use of them in the sense defined. I mean by indigestion or dyspepsia some perversion of the function of digestion, wherever in the alimentary canal, whether mouth, stomach, or intestines, this may take place, whatever may have been its cause, and whatever may be its symptoms. Though referring to perverted function I none the less conceive it as determined either immediately or remotely by some alteration in structure, be that alteration of a gross character or one requiring a microscope for its detection, or still further some abnormality in the "chemical structure" of the tissues concerned. Inasmuch as the first object of clinical investigation is to ascertain "what is wrong" and "how it is wrong" before attempting treatment, we regard the morbid signs and symptoms present in any case as the evidence upon which our opinion is based, and the more accurately we obtain the evidence the more correct is likely to be our final judgment. Clearly, then, the numerous and diverse symptoms which may result from a malperformance of the digestive function should be used as the material upon which the actual seat and nature of the fault should be diagnosed. To some minds so satisfying is the word "functional" that its application to a morbid state is considered to absolve the user from all further responsibility of seeking out the underlying causal and associated conditions, and a "symptomatic treatment" is the logical sequence. For the intelligent appreciation of the symptoms of indigestion, to refer them to their cause and rightly to interpret the bearings of the symptoms to one another, require, to my mind, these qualifications: a knowledge of the normal anatomy and physiology, an experience of the symptoms themselves and the circumstances under which they occur, and a systematic and orderly conception of the subject whereby the investigation of any given case may be pursued. As a contribution towards providing the last the following remarks are offered.

Given, then, some defect in digestion, there require to be examined, (*a*) the conditions which have given rise to it (the so-called causes), and (*b*) the perversions of well-being which it in turn has determined. The former is often far to seek and may at the best, with the present means at our command, be but imperfectly obtained, so complex are the circumstances; for the latter accurate observation is essential. Though regarded separately, it is none the less true that they are overlapping aspects of a common problem towards the solution of which each contributes.

The causal relationships of indigestion are of the widest; the antecedent conditions are well nigh innumerable, but they may be conveniently grouped thus—

A. Dietetic errors, improprieties in the ingesta.—These are among the most frequent, as they are the most obvious, causes of dyspepsia. It is not necessary that the food should of itself depart from a physiological standard; perfectly normal articles of diet may be presented under conditions which render them indigestible. Thus there may be far too much taken or a wholly insufficient quantity to excite the digestive process, the former error being, in this country at least, the more frequent. The excess or deficiency may extend to all the requisite alimentary principles or be confined to one of them; too much or too little fluid, for example, with meals may each be responsible for an impaired digestion. Or, again, certain ingredients may be so associated as to render them indigestible, whilst taken separately they are open to no objection; such, for instance, are starchy or proteid foods enveloped in fat, as met with in meat smothered in greasy sauces or hot buttered toast or pastry. Ices or iced beverages, perhaps harmless alone, may seriously interfere with the digestion of other substances taken with them. Or food may determine indigestion by being imperfectly cooked, by a too monotonous repetition or presentation in an unappetising form, thereby preventing rather than inducing the needful flow of saliva with such consequences as that brings about. Another and common cause of dyspepsia is irregularity in meals, upsetting thereby the rhythm of digestion, or, as when too quickly following one another, interfering with the gastric digestion in its progress. Nor must idiosyncrasy in respect to certain articles of diet easily digestible by the great majority be forgotten. These are possible circumstances in which suitable and fit food may become harmful. Not infrequently, however, the error consists in some element of the food being distinctly noxious. This condition is represented in its simplest form by articles of diet which contain a large proportion of material which is absolutely indigestible, for the digestion of which, that is, the solvent juices of the canal are incapable. Such are the husks, skins, and seeds of vegetable or fruits and many uncooked food stuffs. The ill effects of such bodies are mainly caused by the mechanical irritation they give rise to. More serious are the results which follow those ingesta which are more actively irritant or even toxic, such as mineral poisons or the more subtle agents developed in decomposing or tainted nitrogenous food. In estimating the results which follow one or other of these dietetic errors regard must be had to whether it be of occasional or habitual occurrence, and allowance has also to be made for the wonderful degree of tolerance which the human alimentary canal may acquire by habit.

B. Next to these immediate causes of an indigestion of external origin are those which arise in the body itself, and of these the simplest are: 1. *Imperfections in the performance of the various movements connected with digestion.* To insufficient mastication many a case of dyspepsia may be referred, and a habit of "bolting the food" is as frequently responsible for this as are defects in the teeth; whilst such causes as paralysis of the masticatory muscles or ankylosis of the temporo-maxillary joint are as obvious as they are exceptional. Disturbances of the normal peristalsis of the stomach and intestines however induced, whether by structural changes in the organs themselves or mal-innervation, are of common occurrence, sometimes accelerating the passage of the contents, at others delaying it, more especially perhaps in certain sections of the canal, but in any case interfering with the orderly and progressive sequence in the digestive stages which is so essential to the proper performance of the function. As regards the movements of the stomach proper there is reason to believe that they are capable of being aided in their effect upon the gastric contents by the movements of the diaphragm and even of the heart, which may together be sufficiently effective to compensate for the complete absence of the stomach peristalsis when that organ by adhesions or from other causes is incapable of acting. 2. Less obvious than these impairments of motility are the imperfections due to *faults in the composition and quantities of the digestive secretions*, although the growing practice of examining the stomach contents is doing something to provide more precise knowledge of this difficult subject. A deficiency of saliva, besides leading to failure in the amyloid digestion is indirectly harmful by removing one of the normal stimuli to gastric secretion, whilst an excess in salivary flow diminishes the activity of the changes in the stomach. An over secretion of hydrochloric acid or a considerable deficiency of the same is regarded as of more frequent occurrence than errors in the quantity of pepsin that may be found. But from whatever cause it may arise gastric indigestion not only determines its own particular perversion of the entire digestive process, but also tends to occasion disturbance further on by submitting to the other fluids a chyme which is ill adapted to be acted on by them. Of the precise effects of abnormalties in these later fluids—the bile, the pancreatic and intestinal juices—our knowledge is far from satisfactory, but we do know sufficient to be able to affirm that errors in their composition or quantity are followed by some fault in the normal intestinal changes. The problem to be solved is how to distinguish the indigestion primarily resulting from their shortcomings from that which is purely gastric in origin. 3. A third group of conditions liable to determine maldigestion are those brought about by *bacterial action in the gastro-intestinal contents.* In health the changes induced by these micro-organisms, which may be regarded as normal inhabitants of the canal, are accessory to and in some degree an aid to the regular chemical processes carried out by the secretions, although they are scarcely to be regarded as absolutely essential. But it may be easily seen that whether from the ingestion of toxic organisms or from the perverted action of those which are under ordinary circumstances harmless (such, for instance, as their having to deal with material of an unusual character) poisonous substances may be formed and indigestion set up. 4. Another source of

disturbance in the process of digestion is connected with a function of the alimentary mucous membrane and its glands, which is too often overlooked. It is forgotten that this membrane has besides its extensive secretory capacities a duty to discharge as a channel of *excretion*. Little is accurately known of this it is true, and it is probably when there is some general morbid state existing, such as fever, that this property of the mucous membrane is best appreciated. In this respect, as, indeed, in many others, the membrane may be compared with the skin, the eliminative powers of which even of products of intestinal fermentation are well known, as are also the results of their arrest. There is also good reason for believing that the accumulation of gases found in the stomach and intestine owe their origin in part to direct transfusion from the blood, especially when rapid distension takes place after the removal of ascitic fluid in hysteria and cardio-pulmonary disease. 5. Ordinarily the products of digestion as they become diffusible are absorbed from the stomach and still more from the small intestine into the blood and lymphatic currents, and not only the digesta but also the greater part of the many pints of the various secretions that are daily passed into the canal. It may not unreasonably be surmised that the gradual removal of these materials facilitates the necessary changes in that which still remains in the tube and that a failure in their absorption interferes with the normal course of digestion. In this way, then, such conditions as may *interfere with absorption*, a function quite distinct from that of digestion, may become the cause of a very considerable dyspepsia.

Having thus indicated *seriatim* the various directions from which digestion may be immediately interfered with, it must not be supposed that each acts alone for seldom can such be the case. Far more frequently the causal or precedent conditions are a complex the factors of which interact in the production of each other as they also do in bringing about the diseased state. In order, however, to arrive at a more comprehensive conception of the causal relationships of indigestion it is desirable to consider these various groups of preceding and associated conditions from other points of view, such as how or by what means do they bring about their ill effects and to what more remote state or states may they in turn be referred. It is clear that, given one or other of these determining conditions of indigestion, it may act by irritation or injury of the structures concerned, that is the alimentary canal and its glands, leading to perverted action on their part; or its effect may be mainly, if not entirely, upon the material in the stomach or intestines which is undergoing digestion interfering therewith and having little or no effect upon the organs themselves; or it may be that the given cause acts in both of these directions. It is to the second of these, when the process is disturbed without any associated abnormality of the organs, that the term "functional dyspepsia" is alone permissible, if it be permissible at all. The ingesta, including therein the micro-organisms which gain entrance to the canal, are provocative of dyspepsia either by any direct unfavourable action they may exert upon the canal in virtue of irritant or toxic properties they may possess, and by setting up vascular, catarrhal, or even more serious inflammatory lesions lead to an impaired motility or perverted secretory action and thus determine an indigestion; or the same result may be reached by a direct interference by the ingesta, owing to its bulk or specific character, with the chemical processes carried on by normal secretions in a healthy canal, or the two modes of perverted action may combine in producing the morbid state. Disturbances of motility produce effects by prejudicially affecting the character of the digesting foodstuffs, interfering with their mechanical disintegration and the necessary admixture with the secretions, or by delay in propulsion favouring abnormal decompositions by the fluids or by organisms, a condition well exemplified in a dilated stomach or in a chronic constipation. It is to this cause also that sensory-motor symptoms such as colic are to be referred. Errors in the quantity or quality of one or more of the several digestive fluids, or perversions of the excretory function of the mucous membrane causing an escape into the canal of noxious bodies, or interference with the due absorption of the digested products, will act as causes of indigestion by disturbing the proper chemical changes in the canal, giving rise maybe to toxic substances which in turn react upon the mucous membrane and glands either directly or after absorption, thus establishing a vicious circle. Directly or indirectly, sooner or later, however apparently diverse the causes may be, the resultant is perversion of the chemical process to which, as will be seen, the manifold symptoms which may occur are to be referred.

Passing now to consider how these groups of causes may themselves beseverally induced, the ingesta may be at once dismissed and attention directed to those which arise within the body itself. Of these undoubtedly the most important are the errors in quantity or quality of the secretions. It has already been stated that our knowledge of this subject leaves much to be desired, and beyond the saliva and gastric juice we assume rather than know. But at least we can recognise two separate sorts of conditions which may determine such errors. The most obvious are primary structural defects in the organs concerned, whether these be of a temporary and transient character such as vascular states of congestion or hyperæmia and the milder inflammatory lesions, or those of a more permanent character, such as degenerations, fatty, lardaceous, and the like, or definite new growths; or such accidental complications as the blockage of the bile or pancreatic ducts by a calculus. The interference with the proper secretion of the various juices which such lesions may cause is apparent, and not less obvious is their harmful effect on the movements of the canal, on the excreting functions of the mucous membrane with its glands, and on the due absorption of the digested materials. It is going outside my present limits to discuss the etiology of these structural changes, though it must be remembered that some at least are induced by those dietetic errors which have already been referred to as causes of indigestion. More obscure, and perhaps on that account more interesting, are the morbid states of organs and functions apart from the digestive tract which give rise among other symptoms to some of a dyspeptic character. Foremost among these remote causes are those which may be classified as "nervous." Concerning the innervation of the gastro-intestinal musculature we have a certain knowledge both as to the share taken therein by the vagus and sympathetic respectively, and our information on the nervous supply and function of the salivary glands is as precise as any that we possess concerning secretion; beyond that much cannot be claimed. It would not be difficult, however, to adduce examples of indigestion which are clearly attributable to nervous states causing a disturbed peristalsis and a perverted secretion or both; the nausea, vomiting, diarrhœa, and even gastro intestinal pain which may result from violent emotional states are well known, and closely similar to such a centrally acting cause are those more numerous reflexly induced by such as ovarian and uterine diseases, renal or biliary calculus, &c. An excellent example of a dyspepsia of reflex origin is to be found in the indigestion so frequently accompanying phthisis quite apart from that due to an associated structural disease of the stomach and intestines. The explanation of the pathology of the condition we owe to the admirable work of Dr. Head,[1] who has shown that both during the very earliest stage before there are any marked signs in the lungs, and also during the stage of gradual invasion of the tuberculous disease, there are attacks of referred pain and superficial tenderness over the mid-dorsal areas, as well as bi-temporal headache and tenderness of the scalp. These sensory phenomena are liable to ensue "when the bases of the lungs become affected with disease of a certain type. But these areas from the sixth to the ninth dorsal stand in close relation with the stomach, especially those on the left side. These two organs, the bases of the lungs, and the stomach send sensory impulses into the same segment of the central nervous system: an affection of the one which causes referred pain and superficial tenderness tends to cause a reflex disturbance in the other organ that refers into the same areas." Hence the liability of symptoms referable to the gastro-intestinal tract when fresh outbursts in the lung have set up pain and tenderness in the areas mentioned. Such symptoms are nausea, loss of appetite, and even vomiting. "The tongue is at first quite unaltered, the bowels remain regular, and the evacuations are unchanged in character; the pain is not increased by food, and vomiting does not necessarily relieve the pain and headache. On the other hand, anything which relieves the pain and headache will remove the nausea and vomiting." The dyspepsia of the latest stages of phthisis, which "is rarely accompanied by referred pain and superficial tenderness, is mainly characterised by flatulence, eructations, and signs of dilatation of

[1] Brain, 1896.

the stomach and feeble motor and sensory activity, accompanied by marked signs of organic change in the walls and mucous membrane of the stomach." Whilst we may have some notion of how a peripheral nervous impulse may reflexly inhibit or stimulate gastro-intestinal peristalsis, we have no knowledge of the paths taken by such impulses as determine the secretion of a gastric juice deficient in hydrochloric acid or containing a large excess of that ingredient such as undoubtedly occurs, and with every reason to believe through perverted innervation. Whilst it is conceivable that the necessary fluids may fall short in their normal character from a deficiency of materials from which they may be formed by the secreting glands it is doubtful if such really occurs. But at the same time there are good grounds for believing that in conditions where the general tissue metabolism is gravely impaired or the chief excretory organs seriously diseased the consequent throwing into the circulation of unusual or excessive products of waste supplies to the several digestive glands a blood from which vitiated secretions are prepared. It is probable for various reasons that the liver is particularly liable to suffer in this direction. The frequent association of gastro-intestinal complication with renal disease is well known, and there is some reason to believe that the indigestion of this state is in part at least due to a perverted excretory function of the alimentary mucous membrane determined by the disturbance of the kidney function with its consequent failure to eliminate the waste products.

To summarise what has been said as to the causal relationships of indigestion, it would seem that the immediately preceding and associated conditions are separable into six groups, two of which are of origin external to the body, whilst the others are internal; and that the latter are directly referable to primary structural defects of the digestive organs or to impaired innervation of the muscular and secretory apparatus centrally or reflexly induced. And that whatever may be the nature of the disturbing cause it produces its effects almost entirely by interfering with the chemical processes which take place in the alimentary canal. It is this latter circumstance that confers upon digestive disorders their peculiarity, serving to distinguish them from the diseases of other systems and suggesting also the lines upon which their treatment, at least, in great part, should be based. It is less the disorders of the organs involved than abnormal processes taking place in the material undergoing digestion that constitute the *fons et origo* of most indigestions, and we have nothing like that to deal with when considering the morbid states of other functions, when for the most part some structural change, obvious or obscure, underlies the abnormal manifestations.

Having now considered the relationship which indigestion exhibits towards precedent and associated states, let us turn to those aspects of the subject which deal with the effects upon the organism which the indigestion itself brings about, with the sequential results of which it is the cause or antecedent, as exhibited by what are known as the signs and symptoms. The symptom complex which may attend any form of indigestion requires to be carefully unravelled ere the real relationships of the phenomena presented are satisfactorily understood and before a reasonable plan of treatment is formulated. To begin with there are the associated symptoms due, not primarily at least to the indigestion, but to the underlying cause of it and of them. Possibly no doubt the indigestion may tend to aggravate or modify these as they in turn may qualify the more strictly dyspeptic manifestations. Inasmuch also as the ultimate object of the digestive process is to supply the material for the tissue nutrition it may well be that among the remote results of an indigestion, especially if it be of any duration, the general nutrition should suffer. It is needful to differentiate the evidences of this from the dyspeptic symptoms proper. After making, however, due allowance for these there still remains a most extensive and varied range of departures from sound health of all degrees of severity which are distinctly to be ascribed to some flaw or other in the digestive process. The extreme diversity of these symptoms is one among other reasons which renders the investigation of the subject so difficult. But this very diversity is only what might reasonably be expected when the great extent of the organs is considered and the many and different phases of the digestive function is remembered. The widest and most abundant opportunity of disturbance exists in the natural condition of things, and the directions whence disturbance may arise being as numerous as they are a complicated and variable manifestation is the inevitable result. It will be convenient in the consideration of the symptoms and their bearings to adopt the distinction of *local* and *remote*, though it be in some respects an artificial arrangement and not capable of being strictly observed. By *local* symptoms is meant those which are obviously and directly connected with the digestive organs, and among the most constant are abnormal sensations. Inasmuch as the function should be performed without giving rise to any sensation after the food is swallowed it may be laid down that any conscious feeling in the course of the process is wrong. Frequently there is nothing beyond a sense of weight and oppression vaguely referred to the epigastrium or generally over the upper half of the abdomen, or this may amount to positive pain. Most variable and of uncertain significance is this symptom; strictly localised or widely diffused, relieved by pressure or acutely tender, stabbing, cutting and paroxysmal or continuous, are but some of the qualities by which it is marked. A nasty taste in the mouth with a furred tongue and foul breath may be the frequent complaint of one patient, whilst another, equally a dyspeptic, finds no place for such in his category of ailments. Acidity and heartburn, nausea and vomiting, uncomfortable distension of the abdomen, flatulence and the passage of wind, gaseous eructations and belchings of an acid or bitter or tasteless fluid, diarrhœa or constipation, with possibly an impaired appetite, capricious or entirely wanting, and unhealthy stools of all variety of consistency, odour, colour, and appearance, complete a list the items of which in all degrees and combinations constitute the local symptoms of indigestion.

It is not my present purpose to discuss these phenomena in detail nor to indicate so far as may be possible their respective significance as diagnostic of the nature and seat of the determining fault; but referring to the two main conditions under which, as we have seen, the various exciting causes of indigestion may be grouped—viz., obvious structural disease of the organs and direct interference with the chemical processes taking place in the stomach and intestines—it is certainly the case that these local symptoms are present in a greater or less degree whatever may be the character of the cause, and in the more pronounced and graver structural lesions they may almost be regarded as paramount, the remoter manifestations being in the greater number of cases scarcely existent. The symptoms immediately resulting from an indigestion not connected with the alimentary canal or its glands, but with parts and regions remote therefrom, are both clinically and pathologically the most interesting phenomena connected with dyspepsia. Inasmuch as many of these are induced by affections of other systems they are not diagnostic of indigestion, and their true value in the diagnosis thereof becomes proportionately more uncertain, requiring more careful weighing for their proper appreciation. They may be the grounds upon which the patient seeks advice, and the manner in which they may be presented is often such as not to suggest, at least in the first instance, a digestive disturbance as being at the root of the matter. Since also they may and frequently do occur without any pronounced symptoms more obviously referable to the digestive organs the difficulty of diagnosis becomes the greater, and not seldom the condition may be regarded as one of primary nervous cardiac or pulmonary disease the relation to an underlying indigestion being so obscure.

Prominent among the *remote* manifestations are those which may be comprehensively designated "nervous," and of these headache is perhaps the most frequent in occurrence, as in turn indigestion is probably the commonest cause of headache. As regards locality, whether generally diffused or localised to the frontal, vertical, temporal, parietal, or occipital regions, the time of its occurrence in relation to food, its characters—so far as words can describe it—dull, aching, throbbing, &c., nothing specifically characteristic can be affirmed—nothing, that is to say, which can at once enable a given headache to be set down as dyspeptic in origin, however probable such may be the case. Once, however, its cause can be so defined some significance may be attached to these several features as helping to indicate the special factor or factors of digestion which may be at fault. But inasmuch as the laborious researches of Dr. Head have shown that these areas of pain with their associated areas of scalp tenderness are primarily at least to be regarded in connexion with corresponding regions of pain and tenderness over the trunk rather than with the thoracic and abdominal

viscera which may be at fault, the diagnostic value of headache in respect to dyspepsia becomes somewhat diminished. None the less, as symptoms of indigestion, headache, and hyperalgesia are amongst the most frequent, whilst the absence of tenderness, though the pain may be excruciating, distinguishes the true megrim from the bilious, sick, or dyspeptic headache. Scarcely less frequent than the foregoing, and often extremely distressing, are giddiness and vertigo. Subjective affections of sight, such as amblyopia, coloured flashes of light, muscæ volitantes, &c., or of hearing, such as tinnitus aurium, are also of no unusual occurrence in dyspepsia. The association of drowsiness with indigestion is generally familiar, but the connexion of wakefulness with the same state is not perhaps so well-known. The condition of irritability, of temper, contrasting so strongly as it does with the sense of comfort and placid well-being that attends a good digestion, is closely simulated in the course of still more remote disturbances of nutrition to which undoubtedly dyspepsia contributes to the development of, although it is here sought to distinguish between the symptoms for which indigestion is distinctly responsible from those due to the later metabolic change in the tissues which are really different from the true digestive processes. Attacks of mental depression amounting to actual hypochondriasis and melancholia with delusions of suspicion are well recognised as of frequent dependence on imperfections in digestion; the very name melancholia, a term of Hippocratic medicine, signifies the connexion. It has also been made clear that outbursts of mania or other psychic disturbances in those whose mental powers are perturbed are not infrequently traced to failures in the digestive process, especially if there be constipation. A close relationship between that condition of deficient nerve power known as neurasthenia and disorders of digestion has been described, although here again the general deterioration of nervous energy may more immediately be the expression of an impaired nutrition of which a dyspepsia may be but one factor in the production. Corresponding in some measure to neurasthenia of dyspeptic origin is a general sense of lassitude and muscular weakness of like cause, though partly due in all probability to an inadequate removal of the results of an abnormal tissue metabolism; and the same may be said for those violent cramps, more especially of the muscles of the calf, which not infrequently result from dietetic or digestive errors. Pains in the back and in the limbs, usually of a dull, aching character, the former sometimes due to a loaded colon, and therefore more properly to be reckoned among the local symptoms, are commonly complained of, or a pain about the right shoulder so frequently associated with hepatic trouble and to that extent a possible accompaniment of indigestion.

Among the disturbances of the circulatory function attributable to a disordered digestion may be mentioned palpitation and all degrees of cardiac irregularity up to complete intermittence or even fainting and pains over the region of the heart often closely simulating angina. The displacement of the organ by flatulent distension of the stomach or intestines may interfere with its action; but this is not the only way in which indigestion disturbs the heart. The effects exhibited by the peripheral circulation are not less marked, as witness the flushing of the face so often following a meal even free from alcohol and of the simplest character. The coldness of the extremities is another phenomenon of the same class. Respiratory defects are much less commonly observed, though the so-called "stomach cough" is among the symptoms appreciated by the laity. Whilst doubtless an expression of gastric or gastro-intestinal irritation, it does not usually accompany the more definite evidences of indigestion. A true dyspeptic dyspnœa is less well known, but of its existence there is little doubt both with other dyspeptic symptoms or so predominating as to obscure its real origin. Along with a sense of oppression and impeded breathing is a constant desire to take a deep inspiration occurring in attacks often of some hours' duration and not infrequently at night—a condition which recalls in its description an asthmatic paroxysm as provocative of which indigestion also takes a high place.

A connexion between indigestion and affections of the skin has long been recognised, although different opinions have been held as to the degree of the relationship. For whilst it is very certain that an eruption of urticarial wheals, of erythema, of pruritus, or even of eczema or acne rosacea, to mention only those cutaneous affections of most frequent occurrence, may follow the ingestion of certain articles of diet, just as these and other rashes may be caused by various drugs, the actual conditions of their development is apt to be most uncertain. Not only are such results met with in but few individuals and are of nothing like universal occurrence, but they are not constant even in the same individual, and they may or may not be accompanied by definite dyspeptic symptoms, such as pain, vomiting, diarrhœa, &c. Setting aside for the moment the question of how such eruptions are produced, it is doubtful whether they can be regarded as results of indigestion, and whether they are not rather to be considered as caused by the direct toxic action of certain ingredients contained in the articles of food with which the process of digestion is not strictly concerned. Sometimes there is good reason to believe that coincident with the cutaneous urticaria or eczema similar if not identical conditions are developed in the alimentary mucous membrane, and in such cases evidences of a perturbed digestion are of course likely to be manifested. The long-continued ingestion of certain articles of diet, such, for instance, as alcohol, may, by the injurious effect it exerts in the nutrition of the tissues, tend to produce certain skin affections, but such are not to be regarded as true dyspeptic phenomena, from which indeed they are really remote; rather are they true skin diseases predisposed to by the malnutrition which improper feeding or imperfect digestion have determined and immediately induced by some locally exciting cause. It is on the whole probable that the relationship of skin affections to dyspepsia is not so close as was formerly supposed, and that in most cases the element of idiosyncrasy has to be considered—a circumstance that would go far to shift the responsibility for any given eruption to the cutaneous structures themselves or their trophic governance rather than to place it upon a disordered digestion. The evidences of indigestion manifested in the urine are seldom the cause of actual discomfort to the patient, and beyond the familiar deposit of urates usually require an elaborate analysis for their detection, whilst as yet the significance of the abnormalities thus observed is only very vaguely understood. Even the precipitate of lithates, as well as of phosphates and oxalates, which may accompany very definite dyspeptic conditions are probably expressions of later metabolic perversions rather than of direct imperfections of digestion. It is very certain, however, that the process of digestion even in health does exercise a very real effect upon the character and composition of the urine as witness the increased alkalinity after meals and the variations in the amount of the nitrogenous constituents, urea, uric acid, and creatinine, with a full or diminished diet, although such bodies as these are only remotely connected with digestion and are products of tissue waste. The kidney as an excretory organ is concerned with the elimination of some of the results of intestinal putrefaction which are absorbed into the blood in place of being voided with the bowel evacuations. The most important of these substances are the aromatic sulphates and albumoses. The former are compounds of such bodies as indol and skatol with sulphuric or glycuronic acid and alkalies, especially potash. These bodies known as chromogens are themselves colourless though readily giving rise to pigments on the addition of acids. They are mainly, if not entirely, originally derived from the intestine, and their presence in excess may be regarded as an index of undue intestinal putrefaction. It has been proposed to ascertain the point at which excess is reached by considering the ratio of the ethereal to the so-called "preformed" sulphates or neutral salts of the alkalies, but the exact significance of their presence beyond the general fact I have mentioned I am unable to say. The existence of albumosuria or the very exceptional occurrence of peptonuria are indicative of a certain degree of proteid digestion, the products of which have been absorbed into the blood, and in virtue of their toxic properties have induced an irritation of the kidney and thus led to their excretion. But it by no means follows that this digestive process has taken place in the alimentary canal, for the albumins of the tissues may be so dealt with by microbic invasion. Even when their source may with reason be assumed to be the gastro-intestinal tract, their presence in the urine may not necessarily depend upon an error in digestion so much as some imperfection in the process of absorption from the mucous surface of the bowel. Glycosuria, oxaluria, and phosphaturia are probably but indirectly symptomatic of mal-digestion, whilst their relation to tissue metabolism is unquestioned. On the whole it may be said that the urinary abnormalities immediately due to dyspepsia are few, and interesting as they may be, and

valuable as is their promise, they cannot at present be said to count for much in the actual diagnosis of indigestion, far less to afford any indication of the precise nature of the digestive flaw.

In seeking to explain these exceedingly diverse and widespread results of an imperfect digestion it becomes necessary to consider the structural relations of the alimentary tract with the other organs of the body and thereby to trace the functional relationships which these remote symptoms express. By two distinct structures is this connexion established—the nervous and the vascular. The blood-supply to the alimentary organs is most extensive, so much so that at any moment a third of the total quantity of the blood of the body is contained in their vessels. This amount is easily capable of great increase by conditions of central or reflex origin which lead to paralysis of the splanchnic area. The direct arterial supply from the aorta possesses—at least, as far as the stomach and intestines are concerned—a most complete series of anastomoses sufficient to compensate for any arrest or obstruction to the circulation in any one part; and this direct supply *viâ* the cœliac axis and inferior mesenteric vessels is further supplemented by a most elaborate system of post-peritoneal communications between the visceral and parietal branches of the aorta sufficient, as has been shown, efficiently to carry on the circulation even when the main gastro-intestinal trunks have been obliterated. Even more extensive are the arrangements for the venous return, and although there is interposed an obstruction to the gastro-intestinal flow in the shape of the hepatic portal circulation, this is in part counteracted by the free communications between the gastric and mesenteric veins with the œsophageal and inferior hæmorrhoidal as well as the sub-peritoneal parietal venules. Accessory to this venous drainage, and also concerned in removing the digested products is the lymphatic system of vessels and glands. Our knowledge of the innervation of the digestive organs is in some particulars admittedly inexact. Fibres from both the cerebro-spinal and sympathetic systems are distributed to the various structures and in some cases have been traced to an intimate connexion with the muscular and glandular elements, but concerning the paths taken by many of the afferent impulses information is much to be desired. Enough is known, however, to enable us to recognise generally the connexion of the alimentary organs with the nerve centres and thus to appreciate the reflex and referred phenomena induced in other systems. So extensive and intimate a neuro-vascular connexion with other organs of the body at least indicates the possibility of remote symptoms being induced by digestive disturbances, suggests the channels by which they may be developed, and permits us to regard these disturbances as being in the nature of irritants to those distant parts, such irritation acting either on the nerve terminals in the digestive tract and so reflexly affecting the functional manifestations of other organs, or by the direct transference by the blood and lymph currents to these structures of toxic material absorbed from the gastro-intestinal canal. By whichever of these routes the remote organs become secondarily affected there appear to be two conceivable methods in which they may be disturbed—either by the direct interference with the normal activities of their protoplasmic elements, or by some modification of the blood-pressure in their vessels. That either of these methods is possible must, I think, be admitted, but proof of any one of them is at present wanting. But inasmuch as toxins are known to be formed in the alimentary canal under conditions of mal-digestion and the injection of bodies possessing poisonous properties into the blood current is well known to lead to the production of symptoms characteristic of the poison, it would seem highly probable, to say the least of it, that noxious substances absorbed from the intestine would equally determine morbid symptoms in distant parts. Doubtless to a very great extent the organism is protected against the enterogenetic poisons, and it may be—at least, in the majority of cases—that some impairment of the integrity of the intestinal mucous membrane is necessary to permit the absorption of the toxins, and this might be such as the poisons would themselves inflict on the epithelial cells. Whether when absorbed into the circulating medium these substances produce their effect directly on the tissues or indirectly upon them *viâ* the nervous system there is little or no evidence to show, merely surmise; but whether by either or both means such poisons would seem adequate to explain most if not all the remote symptoms which are properly referable to indigestion. That peripheral irritation of gastro-intestinal origin might of itself be sufficient to induce distal symptoms without the absorption of any harmful material appears possible, for the presence of intestinal worms has been known to produce such results. As to the other suggested explanation for some of the distal symptoms—viz., that they are due to variations in blood pressure reflexly induced by gastro-intestinal states—very little can be said. Such symptoms as giddiness, vertigo, and even some dyspeptic headaches, may be thus explained, and some grounds for this may be found in the circumstance that some of these phenomena may immediately disappear after action of the bowels—a circumstance that is always attended with a fall of blood-pressure as constipation is accompanied by the reverse. The relief from headache may follow so quickly as almost to negative the idea that the emptying the bowel has simply produced the effect by getting rid of toxic material.

Mention has already been made of the fact that definite structural lesions of the alimentary tract, however marked may be the local symptoms, are frequently wanting in any special evidences of perturbed function in other organs except in so far as they may share in the general malnutrition which the change engenders. Conversely it may be said that whilst disturbances in the chemical processes taking place in the stomach and intestines may, and usually do, give rise to local symptoms it is pre-eminently in connexion with these immediate digestive imperfections that the remoter manifestations are likely to occur and may indeed be the sole evidences. This distinction if true would be of distinct value for diagnostic purposes, and my experience leads me to believe it to be of some value in this direction.

Among the many features of dyspepsia that call for comment the uncertainty of its manifestations is as well known as it is remarkable. How commonly is it the case that a patient—the subject may be of frequent indigestion—consumes with impunity a meal that violates in quantity or quality most of the dietetic rules he has been accustomed to observe and has found almost essential to his well-being. What is one man's meat is another man's poison all are familiar with, and even how often the food which is suitable to-day may disagree to-morrow or the plainest fare may provoke an indigestion. The fact that what are called errors in diet do not of necessity induce discomfort, local or remote, and with many people rarely, if ever, lead to indigestion, would seem to suggest that the *materies morbi* is less in the ingesta as presented than in the subsequent digestion processes, and is to a great extent independent of the actual food taken. It is to remedy this that the treatment should be directed, and, as I fully believe, often with more success than by elaborate dietetic rules.

Lastly, if we compare the precedent with the sequential relations of dyspepsia, we find on the one hand the causal conditions acting in most cases by inducing a perversion in the chemical processes with production of toxins and themselves determined by noxious ingesta or by motori-secretory perversions due to structural change in the digestive organs or far more often to a defective innervation; on the other hand are resulting symptoms the expressions of local perversion of the digestive function or of the distant effects due to toxic absorption or reflex irritation.

My time, gentlemen, but not my subject, has reached its limits, and I am fully conscious that in the remarks I have made, or, perhaps, more particularly in the way I have treated my theme, that I have laid myself open to the charge of having expressed in too formal, too cut-and-dried a manner a subject which presents too much uncertainty and variety rightfully to admit of being so considered, and that I have aggravated my offence by saying nothing that is new. To the latter count I plead guilty at once, and can only urge in extenuation of the former that it is the want of some formal outline that appears to me to be responsible for some at least of the vagueness in which the subject is enveloped, and that what I have said, if it serve no other purpose, affords a basis for criticism and probable improvement. It is possible, of course, that my method tends to strain relationships and to overlook much that is important for the sake of uniformity, but, at the same time, it allows us to formulate what we do know and to indicate the directions in which we are ignorant, whilst I believe the suggestions I have offered to be more comprehensive than the groupings of dyspepsia which are commonly put forward. However lofty be the platform from which the superior mind unfettered by formality surveys the efforts of the systematic observer, there are many, I believe, who would be helped by some guide, imperfect though it be, in the labyrinth of morbid phenomena involved in "dyspepsia," and in that belief I have submitted

to your appreciation the foregoing remarks as embodying the considerations which, in my judgment, are essentially preliminary to the formation of a diagnosis, and, therefore, to the rational treatment of any case of indigestion.

WIDAL'S REACTION IN THE TROPICS.

BY W. C. BROWN, M.D. ABERD.

SINCE M. Widal in July of last year brought the reaction now generally associated with his name to the notice of the profession there has been in almost every issue of the medical journals some account of the theory, the technique, or the results of the test. But in view of the extreme importance of the subject and the fact that it has so far received but little practical attention in the tropics no apology is necessary for further increasing in some measure this amazing amount of literature. Nowhere is the correct diagnosis of enteric fever more essential than in the tropics. Nowhere is it more difficult, and nowhere has it been admittedly more unsuccessful. Opinions of the most careful and experienced physicians have been, and still are, hopelessly at variance as to the immunity and resistance of different races and individuals to the poison. The frequency of the occurrence of enteric fever, its power of assuming altered phases under altered climatic conditions, and its connexion with the ubiquitous malarial poison, are still undecided questions. It is held by many Indian physicians that natives of India are immune to enteric fever, and by others that it is their commonest scourge. In some text-books a variety of tropical fever is described as "typho-malarial fever." Lengthy descriptions are given of its symptoms, progress, and treatment. It is held by many of the best authorities that there is no such fever existing *per se;* that the cases described as typho-malarial are all referable either to the enteric or to the malarial type, and that if rarely a combination of the two occurs it must be regarded as a combination of two poisons and not as a separate and distinct disease. Post-mortem evidence has not availed to extricate us from this clinical confusion; almost, at times, it seems to increase the difficulties of differentiation. Fatal cases frequently occur which have exhibited a typical enteric temperature and well-marked abdominal symptoms, but which at the necropsy are found to be conspicuously devoid of enteric characteristics. On the other hand mild cases of what is apparently simple continued fever suddenly develop hæmorrhage from the bowel; severe cases of fever, with continued high temperature curve, constipation, and none of the usual symptoms of enteric fever, end fatally by perforation of the intestine, and a post-mortem examination reveals typical enteric lesions. And so far, and contrary to expectation, the microscope also has done little to help us. The frequency with which the malarial organism is met with in specimens of blood has no relation to the intensity of malarial infection. In the gravest cases of malarial fever examinations repeated at different times during a cycle of forty-eight hours frequently show an inexplicably normal condition of the blood. On the other hand, parasites occasionally swarm in the blood-stream of malarial patients who are able to walk about and are probably in better than average health. It is somewhat humiliating at this date to have to admit that a too implicit reliance on the indications for diagnosis afforded by the malarial parasite in any of its phases is a certain source of error; but so it is. Professional opinion in the tropics has in consequence become one of perpetual doubt. The physician, face to face with a grave fever, with the best aids to diagnosis at his disposal, has walked, if not in darkness, in the almost equally unsatisfactory twilight of uncertainty and doubt—an uncertainty incomprehensible to those who have not watched the rapidly changing phases of a tropical fever—a doubt which may not be dispelled even in the post-mortem room. In such a state of affairs the possibility of the existence of an agency that would reliably differentiate enteric fever has been eagerly canvassed, and the developments of sero-diagnosis have been watched and treated with unusual interest. There has now been sufficient time to form a just estimate of the help it will be likely to afford to tropical physicians; and after a somewhat extended investigation of the reaction I am of opinion that in the method of Widal we have been put in possession of a rapid and fairly easy test which, if not absolutely reliable, is of the very highest value. Clinical microscopical science must always be an inexact one; failures must occur in the application of this great discovery, but, if care is given to primary precautions, and attention paid to some simple rules, these can be reduced to a minimum.

Testimony as to the value of the reaction as a diagnostic test may at this date seem superfluous; it must, however, be of interest to know that in the tropics—probably the original *foyer* of all enteric fever—experience has shown that it loses none of its reliability. After a series of examinations of over a hundred suspected cases during the last five months I can point to only two instances where subsequent events did not confirm the diagnosis given by Widal's reaction; and in three cases that were not considered to be enteric fever the diagnosis obtained by means of the reaction received an almost startling confirmation in the subsequent history of the disease. I have appended a table of twenty selected cases from my case-book, showing the general character of the results obtained. Case 4 in the table is a striking instance of the diagnostic value of the reaction. My patient was a young Burman priest of good family who had been living for some time in a very malarial district. When I saw him after he had been brought here on the sixteenth day of his illness, he had had continuous high fever ranging from 103·5° to 104·8F., with no morning remissions; the bowels were constipated, there were no spots and no abdominal symptoms, and his condition was most critical. The case was considered to be one of continued malarial fever. The following day an examination of the blood was made. Malarial parasites in considerable numbers were found, but a slow reaction was obtained with a three days' culture of Eberth's bacillus on agar. The test was repeated on the next day with a 24 hours' culture, with the result that the reaction was somewhat more prompt and decisive. The patient appeared to improve rapidly until the twenty-first day, when he died somewhat suddenly from hæmorrhage from the bowel.

In the tropics a not uncommon form of malarial fever in Europeans may be described as "acute pernicious." It generally occurs in strong full-blooded individuals of middle age: fever comes on suddenly, runs up rapidly from 105° to 107°F. or higher, and is accompanied by marked head symptoms, delirium, and unconsciousness. Death, which invariably takes place within four or five days, is generally attributed to sunstroke; but if the brain is examined it is found to be highly congested and its capillaries blocked with malarial parasites. Case 6 was supposed to be a well defined instance of this grave type of malaria, but the blood gave a prompt and marked reaction with an eighteen-hour bouillon culture. Hæmorrhage from the bowel began on the sixth day, and death occurred from perforation on the 10th. No malarial organism was found, and the ileum was found to be extensively ulcerated.

So much has been written on the technique of the reaction that it appears necessary for me to deal with it only so far as it is influenced by altered climatic conditions. The tests have been confined to microscopical observation; naked-eye observation of serum in test tubes seems to require too much blood to be readily applicable to practice, and I have not been able to avail myself of the ingenious sero-sedimentation tubes of Professor Wright. In applying the test, otherwise a very easy process, the great difficulty—a difficulty which, I think, has been under-estimated but which is practically the only likely cause of error—is the difficulty of distinguishing between true and false clumps. If a loopful of blood serum from an enteric fever patient is mixed with nine loopfuls of a fresh bouillon culture or agar emulsion, the bacilli run together quickly in *true* clumps, the field clears rapidly between the clumps, and the bacilli become motionless. The clumps are characteristic in that they are closely packed, the bacilli actually seeming to *adhere* to each other in thick globular masses which are not all in focus at once. False clumps—the *pseudo amas* of French writers—are more loosely united; the masses are not so dense, and they are less globular. They can be brought into focus generally all at once, and the field is not so rapidly cleared of loose bacilli, for which the false clumps seem to have no specific attraction, and which retain their motility, though that also is lessened. How difficult the distinction is

we may gather from the conflicting opinions of bacteriologists on the characteristics of the grouped bacilli. Gruber has described a thickening of the enveloping membrane of the bacillus as distinctive of true clumping; but this alleged characteristic, though supported by several writers, is denied by M Widal and M. Ricard.[1] If it exists at all, it is so insignificant as to be worthless as a diagnostic sign. Probably the best and only preventive against error is experience in comparison of false and true clumps. In the meantime the chief causes of the formation of false clumps should be noted in order that precautions may be taken against their occurrence. In my experience there are five principal causes of false clumping, and therefore sources of error, in the application of the test. 1. The dilution of the suspected serum may be too great or too small. This is a primary point insisted on by all observers and already fully described, and my own experience corroborates the view that a proportion of 1 part of serum to 9 parts of emulsion gives the best results, and that a stronger or weaker solution is apt to cause false clumping or failure of the test. 2. The culture may be too attenuated. There can be no doubt that if old cultures of the bacilli are used there is much more liability to false clumping. It is so difficult in the tropics to keep tubes of bouillon always ready for inoculation that if the test depended on the ideal condition of an eighteen hours' bouillon culture, it would be useless in practice. Fortunately it does not. The simpler the conditions of any test the greater its practical value. There is no difficulty about keeping cultures on agar, and the highest pitch of virulence and activity can be obtained by making use of a twenty-four hours' sub-culture from a twenty-four hours' culture. The more virulent the culture the more reliable the reaction and the less likelihood of false clumping. No rule, however, can be laid down; old cultures, though not reliable, and always to be used only as a *pis aller*, will often give a perfect reaction. It has been recently pointed out that dead bacilli possess marked agglutinative powers, and they will probably be the reagents of the future.

[1] Annales de l'Institut Pasteur, May, 1897.

3. The mechanical preparation of the emulsion may be faulty. The best method to secure an approximately uniform strength of the emulsion is to place fourteen loopfuls of distilled water on a coverglass, to pick up as much fresh bacillus growth from the surface of the agar as can be easily seen on the end of a platinum needle, and to rub this down in the water until it takes on a faint, cloudy, homogeneous, white colour. Care should be taken to rub down the culture very gently but thoroughly. A twenty-four hour culture is easily rubbed down; an older one is more coherent. If the emulsion is not carefully prepared in this manner clumps of unseparated bacilli will be left floating about in the water. I have found a strength of one to fourteen the most suitable proportion for the emulsion, but the faint white colour it assumes is the best index of a right dilution. If it contains too many bacilli they are so crowded in the field as to obscure the reaction; if too free true clumping is more difficult to determine. All emulsions should be examined under the microscope before mixture with the suspected serum, for even in fresh bouillon cultures false clumps are not unfrequently seen. 4. The specific gravity of the emulsion may have altered since it was mixed. This is especially liable to occur in the tropics, and it is a fruitful source of false clumping and error. If the emulsion is allowed to remain on the cover-glass for a few minutes either before or after admixture of the suspected serum, altered physical conditions are established which favour the formation of false clumps. In order to avoid evaporation and drying which take place rapidly on a flat slide, it is best always to use the hanging drop method, and to moisten the edges of the hollow in the slide by water or a film of vaseline. Reactions on a flat slide are unreliable. After the emulsion is prepared it should be examined as quickly as possible, and never allowed to remain on the cover-glass without putting it on the slide. In working at this point I observed that if a hanging drop in which true clumping has occurred is allowed to dry almost entirely the clumps become fixed in position on the cover; but if the film is then rubbed up with a drop of water the clumps separate and the bacilli resume active movement for a minute or two. The agglutinative material then again

TABLE OF TWENTY SELECTED WIDAL'S REACTION TESTS.

No.	Sex.	Age.	Nationality.	Duration of illness.	Diagnosis (before test).	Reaction.	Remarks and diagnosis as established by progress of disease.
1	F.	18	Siamese	18 days	Enteric fever	Immediate	Death occurred on the twenty-fourth day from exhaustion and high temperature. No necropsy.
2	F.	54	Chinese	17 days	Continued malarial fever	Nil	Recovered. Plasmodia found in large numbers; no enteric symptoms.
3	M.	32	Chinese	33 hours	Malarial fever	Nil	No plasmodium found. Recovery was rapid under quinine.
4	M.	25	Burmese	16 days	Malarial fever	Slow reaction	Died on the twenty first day from hæmorrhage of the bowel.
5	M.	30	Chinese	20 days	Beri-beri	Nil	Diagnosis was confirmed by necropsy.
6	F.	42	European	4 days	Enteric fever	Immediate	Death occurred on the eighth day from hæmorrhage of the bowel. Diagnosis was confirmed by necropsy.
7	M.	6	Eurasian	13 days	Enteric fever	No reaction	Recovery in ten days, with no confirmatory symptoms of enteric diagnosis.
8	F.	30	Jewess	13 days	Doubtful	No reaction	Apparently true enteric; duration of illness three and a half months; two relapses.
9	M.	36	European	15 days	Enteric fever	Immediate	A typical case of enteric fever masked by malarial symptoms.
10	F.	24	European	10 days	Enteric fever	Immediate	A typical case of mild enteric fever ending in recovery.
11	F.	18	Chinese	10 days	Enteric fever	Slow reaction	A severe case of enteric fever ending in recovery; plasmodia found.
12	M.	8	Eurasian	5 days	Congenital meningitis	No reaction	Test repeated on the twentieth day with the same result; death on the thirtieth day.
13	M.	2	European	5 days	Enteric fever	Slow reaction	Recovery in twenty-two days; a mild case of enteric fever.
14	F.	56	Chinese	16 days	Enteric fever	Immediate and marked	Repeated hæmorrhages from bowel; very severe case; recovery.
15	M.	29	Chinese	2 years	Leprosy	No reaction	No case appears to have yet been recorded of reaction of bacillus typhosus with leper's blood.
16	M.	24	Eurasian	10 days	Doubtful	Immediate	A severe case of true enteric fever; hæmorrhage from bowel; recovery.
17	M.	32	European	12 days	Enteric fever	Slow reaction	An ordinary case of enteric fever; recovery in twenty-five days.
18	M.	38	European	18 days	Malarial fever	No reaction	A doubtful case of continued malarial fever with some enteric symptoms. Plasmodia found.
19	M.	28	Hindoo	10 days	Enteric fever	Immediate	Recovery after severe hæmorrhage from bowel; no plasmodia.
20	F.	19	Chinese	21 days	Doubtful	No reaction	Probably malarial but no plasmodia found.

exercises its power, and the bacilli clump once more. This would appear to indicate that true clumps are not so coherent as is supposed, and that the agglutinative action is paralysing and not killing. 5. The exposure to light may be excessive. It is laid down by most observers that clumping after a certain lapse of time is unreliable and a time limit of half an hour has been fixed by Gruber, Grünbaum, and others. This seems a reasonable limit if the specimen is removed from the microscope between each examination. I am of opinion, however, that this false clumping is caused by the strong rays of light from the condenser acting on the vitality of the bacilli, and if the specimen is kept on the stage all the time half an hour is too long. If, on the contrary, it is removed and examined once every five minutes for half an hour it is a reasonable time. If an emulsion without added serum is kept on the stage for half an hour clumps will occasionally be seen to form. Clumps that form after half an hour's exposure may therefore reasonably be considered quite unreliable.

Little need be said about the best method of collecting blood. Capillary glass tubes should be sterilised by heating them in a steriliser or an oven. Their ends should then be sealed. After washing the skin with alcohol the finger is pricked with a sterilised needle and the tube opened. The first drop of blood should be wiped off with the needle and the next drawn into the tube, which is then sealed. The specimen will in most cases be sterile, and may be kept for days. One or more cover-glass films of blood should be made at the same time for examination for malarial parasites. The serum will separate from the clot in the tube in about six hours and may be blown out on a slide practically free from corpuscles. The cases given in the table on p. 1037 have been selected principally with the view of illustrating the practical value of the reaction, and are a fair sample of general results in an examination of over 100 suspected cases. It will be seen that the diagnosis made before the test was applied has been recorded, as well as the evidence, confirmatory or otherwise, of its accuracy that was obtained by subsequent developments, and in some cases by post-mortem examinations. The view that enteric fever is very rare in adult natives of India has so lately as last August been endorsed by Surgeon-Major Freyer.[2] He explains this alleged exemption by a theory that natives gain a comparative degree of immunity in adult life from an almost universal and unsuspected prevalence of enteric fever in children. Whatever may be the state of affairs in India, I can only say that his theory is not supported by the results of blood examinations in the Straits Settlements, where the sanitary condition of Chinese and other races is little better than it is in India. Numerous control experiments have shown that if the necessary precautions are observed healthy blood serum, from whatever race it is obtained, has no agglutinative action on a fresh culture of the bacillus.

Penang.

[2] Brit. Med. Jour., Aug. 7th, 1897.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.—The opening meeting of the session of 1897-98 was held in the Library of the New Hospital for Women on Oct. 5th, at 8 P.M., Miss Cock, M.D. Brux., President, being in the chair. There was a large attendance of members, including some home on furlough from India and China. After some preliminary business had been transacted the following papers were read: 1. A Fatal Case of Meningitis, probably Tuberculous, Lasting Four Months, by Miss Anderson, M.D. Lond., of Manchester. (The paper was read in her absence by the secretary.) The patient was a child, aged three and a half years, and was not seen for a month after the beginning of the illness, so that no notes of the early symptoms were obtainable and no post-mortem examination was allowed. The diagnosis had therefore to be made from the clinical aspect of the case only and the significance of the various signs and symptoms observed was discussed. 2. A Visit to Aix-les-Bains, by Miss Helen Webb, M.B. Lond. Miss Webb gave a detailed account of the properties and uses of the waters at Aix-les-Bains, and dwelt specially on the excellence of the arrangements made in connexion with the administration of the baths and on the attention paid to the comfort of patients in many important respects. The paper was illustrated by photographs and charts prepared by Dr. Forestier, showing the changes produced in renal secretion by the different forms of treatment.

ON THE CONVEYANCE OF DIPHTHERITIC INFECTION BY APPARENTLY HEALTHY INDIVIDUALS.

BY ALEXANDER G. R. FOULERTON, F.R.C.S. ENG., D.P.H. CAMB.,
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AND
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THE following case is an excellent example of the conveyance of diphtheritic infection by an apparently healthy individual. It also furnishes an illustration of the importance under certain conditions of the bacteriological examination of the throat in those who have been exposed to the risk of diphtheritic infection, but have not themselves contracted the disease.

A pupil at a good preparatory school in the country, aged twelve years, was one amongst several boys who were attacked during February, 1896, with a form of tonsillitis, and in his case the symptoms appeared on the 13th of that month. On March 6th a "swab" taken from his throat was examined bacteriologically and reported on as being free from the diphtheria bacillus. The boy was shortly afterwards sent down to the seaside; he was suffering at the time from some difficulty in deglutition and from an attack of erythema nodosum, but the mucous membrane of his throat appeared to be quite healthy. He returned to school in May presumably well. During July of the same year a second outbreak similar to the former occurred at the school. The boy was not affected, but a swab from his throat was again examined and found to be free from the diphtheria bacillus. In the following November yet a third outbreak of the same nature occurred, and on the 30th of that month all the apparently healthy boys, the one under observation amongst them, were sent to their homes. During the three outbreaks there were altogether 43 cases, all amongst the boys, no one else being attacked. Two deaths occurred, both due to heart failure. On the school being broken up the boy did not return to his own home; as he had a younger and very delicate sister it was thought well to put him in quarantine elsewhere for a time. On Dec. 8th a swab taken from his throat was examined by one of us at the British Institute of Preventive Medicine and a pure culture of the Klebs-Löffler bacillus was obtained from it. This culture was of active virulence. A guinea-pig inoculated with it died in less than forty-eight hours. On the 13th a second swab was examined and the specific bacillus was again found. On the same date, his sister meanwhile having been sent away, the boy went to his home. Swabs subsequently examined on Dec. 15th and 20th, 1896, and Jan. 20th, 1897, were found to be free from the bacillus of diphtheria. On his return home the boy was more or less isolated from the rest of the household with the exception of a servant who alone attended on him. On Dec. 21st this maid showed obvious signs of an attack of diphtheria, and the Klebs-Löffler bacillus was cultivated from a swab taken from her throat on the same day. She was at once removed to a hospital, where she remained for six weeks. No other members of the household were attacked, and swabs taken from the throat of each of them proved to be free from the diphtheria bacillus. As regards the case of the maid no possible source of infection other than the obvious one could be suggested.

The Klebs-Löffler bacillus may be found in the throat of an apparently healthy individual under two sets of conditions. Of these the cases of more frequent occurrence are those in which the bacillus persists in and about the throat for a more or less lengthened period after complete convalescence from an attack of diphtheria. The other class of cases comprises those in which the bacillus exists in the throat of an individual, such as a nurse, who has been exposed to the risk of infection, but has escaped an actual attack of the disease. Cases which come within the first class are not by any means rare. But it is difficult to know the precise value to be attached to any figures bearing on the subject unless one at the same time knows the treatment which has been adopted in the various cases, since the persistence of the

bacillus is without doubt largely influenced by the method of local treatment adopted during the acute stage of the disease and afterwards. The most striking instance recorded is a French case in which the bacillus was still to be found in the throat at the end of fifteen months. But so prolonged an infection as this must be quite exceptional. Out of some 4000 bacteriological examinations in cases of diphtheria or of suspected diphtheria which have been carried out at the British Institute of Preventive Medicine, the case in which the longest duration of the bacillus has been noted is one in which it was found by Dr. Hewlett at intervals during twenty-two weeks. In this case, as in ours, the virulence of the culture was proved by experimental inoculation. Cases, again, in which the bacillus is still present three weeks or so after convalescence are in the experience of the Institute of not infrequent occurrence. With reference to this matter the following statistics lately issued by the New York Health Department may be quoted. They give the result of the bacteriological examination in 605 cases of diphtheria. In 304 cases the specific bacillus had disappeared within three days; in 176 cases it persisted for seven days; in 64 for twelve days; in 36 for fifteen days; in 12 for three weeks; in 4 for four weeks; in 4 for five weeks; and in 2 for nine weeks. The case above described, however, belongs, we think, to the second class; that is to say, we look upon it as a case in which the bacillus was found after exposure to the risk of infection in an individual who happened, whether because of a previous infection or not, to be for the time immune against the disease. That the bacillus had persisted in his throat for the forty-three weeks which elapsed between the commencement of the attack in February and the bacteriological examination in December is rendered improbable by the fact that two previous examinations in March and July had given negative results. During the three outbreaks at the school a very careful medical supervision was exercised over all the boys, and from the time when he left school on Nov. 30th up to the time when the bacillus disappeared from his throat a fortnight later the boy was under medical observation daily. It is therefore practically certain that he did not have a second slight attack of diphtheria in November, which might perhaps have otherwise passed unnoticed. As regards recent exposure to infection we ascertained that the boy was in the same class, but not in the same dormitory, as three of the boys who were attacked during the November outbreak. We are also informed that a bacteriological examination of the throat had been made in the case of several other boys from the school. In one case the diphtheria bacillus was found in the throat of a boy under very much the same conditions as those of the one under notice. Four other boys who had suffered from either tonsillitis or pronounced diphtheria in November were found to be still harbouring the Klebs-Löffler bacilli when their throats were examined between Jan. 20th and 30th. In three of these latter cases the bacilli were still present as late as the middle of February.

The treatment of such cases as these is usually satisfactory if thoroughly carried out. It is not sufficient to confine one's attention to the disinfection of the fauces and pharynx. The nasal fossæ also must be douched or sprayed with a germicidal lotion. The nasal fossæ appear to afford a habitat particularly favourable to the growth, or at any rate to the prolonged existence, of the bacilli. This view is supported by the results lately obtained by several bacteriologists who have shown that a bacillus identical both morphologically and in its pathogenic action on guinea-pigs with the Klebs-Löffler organism is to be found in certain cases of chronic rhinitis which had not hitherto been considered as of a diphtheritic nature. In those somewhat rare cases of prolonged diphtheria, too, in which after an acute onset a chronic membranous pharyngitis associated with the presence of the Klebs Löffler bacillus persists, it may be for months, we believe that an affection of the nasal fossæ also has usually been present. In the case described the nasal fossæ were douched with a solution of sulphurous acid, with which the pharynx also was sprayed. This treatment was commenced on Dec. 10th, and five days later the bacilli had disappeared. A 1 in 2000 solution of mercuric perchloride will efficiently serve the same purpose, but must, of course, be used with a little discretion. This treatment has been recommended when advice has been sought at the British Institute of Preventive Medicine with regard to cases in which the bacilli have persisted in the throat after recovery from an attack of diphtheria, and in the cases in which it has been carried out and in which the results could be ascertained has been very successful.

The recognition of these cases is, it is scarcely necessary to say, of extreme importance from the public health point of view. They explain, for example, that recrudescence of diphtheria which is sometimes coincident with the re-opening of schools. They explain also the occurrence of a series of outbreaks with irregular intervals at schools, such as the instance we have more particularly referred to. And in passing it may be pointed out that it is such outbreaks as those mentioned which, in the absence of obvious evidence of the conveyance of infection from one patient to another, led in the past to the belief in the intimate causative relation between defective drainage and diphtheria—a belief now discarded because of the greater exactness in tracing causation which we owe to bacteriology. Medical men generally are now quite aware of the necessity for a bacteriological examination before a convalescent diphtheria patient can for the sake of others be safely released from isolation, however perfect the recovery may appear to be clinically. To this a further rule might with advantage be added: that after a school has been closed temporarily because of an outbreak of diphtheria no scholar should be re-admitted without a bacteriological examination of the throat, whether there is a previous history of diphtheria or not.

THOMSEN'S DISEASE: A FAMILY HISTORY.

BY J. C. CLEMESHA, M.D., M.R.C.S. ENG., L.R.C.P. LOND.

IN January, 1896, I was called to attend a man, aged thirty-three years, who was suffering from hæmoptysis. The symptoms and physical signs led to the diagnosis of phthisis. On inquiry into his past condition he mentioned being subject to a "family complaint," and I elicited the following history. At different intervals during the past twenty years he had been subject to attacks of transient paralysis, which generally affected his arms and legs, rendering him perfectly helpless. At times the muscles of the neck and head were included. He became affected about the age of thirteen years (puberty), and the other members of the family who were so affected were between the ages of thirteen and eighteen years when the disease first developed. Dampness and cold predispose to an attack—or, perhaps, to speak more correctly, are exciting causes. The attack begins by a peculiar sensation of clumsiness or uselessness in the hands and feet, which gradually increases until there is complete loss of power of motion. If, however, the patient, when he perceives these symptoms, walks for two or three hours he can abort the on-coming paralysis. Should he during one of these walks happen to fall he cannot get up without assistance, but when placed on his feet can go a long distance without fatigue. When the patient was younger these attacks came on every three or four weeks, but of late years three or four months may elapse between them and they are not nearly so severe. If an attack comes on during sleep, and he happens to have his arms and legs flexed, on awakening he is unable to extend them without assistance. In his father's case the muscles of the neck, head, and trunk have occasionally been involved in addition to the extremities, causing complete paralysis of the entire body.

The following information has been obtained from the patient's father, who stated that his mother had the disease and was the only one in a family of seven so afflicted. He was unable to state whether his mother's parents were affected. He had one brother, T—— (who had three children who were not affected), and one sister, M—— (who had no family), older than himself not affected. Two of his (the patient's father's) four children were affected. J——, the next brother, did not have it, nor any of his eight children. The next brother, J——, had it, and had a family of eight, only one of whom, the eldest son, had it. E——, a sister, had it when young, but seems to have grown out of it. She was not married. F——, a brother, had it, and died during an attack at the age of thirty-eight years. He was being carried downstairs when he "fainted" and died.

He was not married. V——, who never married, has not had it, nor D—— nor H——, nor their families. The disease in every case developed when the subjects of it were in their "teens." In the patient's father's case the attacks generally came on in the night, most frequently on Sunday night, the day's rest apparently predisposing to the attack. He had his first attack about the age of fifteen years. Cold and dampness seemed to have been exciting causes. He seldom had any premonition of an attack, but would wake up quite helpless and remain so for forty-eight hours, or if the attack was severe for three days. The head and neck were seldom affected. During the first attacks he had at times some difficulty in breathing. At first the attacks came on every year, generally in the spring, but of late only once in three or four years, but they were as severe as ever—even more so.

I was led to record the above family history from reading an epitomised account in a recent number of the *British Medical Journal* of an interesting and important article which was published in the *Deutsche Zeitschrift für Nervenheilkunde* by Dr. Goldflam. Five years ago he communicated some particulars of a family of eleven who suffered from occasional complete paralysis of all four extremities. He has since had the opportunity of carefully and continuously observing two of the members of the family. The condition affected the young people of the family, and showed itself in complete flaccid paralysis affecting the limbs and the trunk, and was characterised by loss or diminution of reflexes and of mechanical and electrical excitability of muscles. The muscles which were hypertrophied showed but little strength, and the examination of freshly excised portions showed that the fibres were unusually large, that the primitive bundles were wasted, and that there was vacuolation in them. In his first communication Dr. Goldflam hazarded the guess that the disease perhaps depended upon some toxic substance acting upon the muscles and their nerve-endings so as to influence and disturb them. This hypothesis receives a certain measure of support from the fact that a ptomaine-like substance is present in the urine of the patients and that a fairly constant condition of leucocytosis is also present. Possibly the poison exerts an influence on the muscles that have undergone some change in structure which renders them more susceptible to the influence of the substance. No doubt an analogy exists between such cases and those of Thomsen's disease.

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SPRAINS OF THE JOINTS, WITH PARTICULAR REFERENCE TO SPRAINS OF THE ANKLE.

BY WILFRID B. WARDE, M.B., L.R.C.P. LOND., M.R.C.S. ENG.

DURING the past few years I have had unusual opportunities for studying severe sprains of joints, and more particularly of the ankle joint. At one time I had six cases of sprained ankle under my care in rapid succession. The observation of these and other cases and a contrast of various modes of treatment led me to certain conclusions which have had a most satisfactory result as far as my own practice is concerned.

If cooling lotions are used or if no special treatment be adopted a sprain passes through the following stages: (1) the joint swells and is very painful; (2) the pain and swelling during the next two or three days are increased by inflammation; (3) usually the joint is distended with synovial fluid; (4) the swelling slowly disappears; (5) considerable stiffness is felt which is slow in disappearing; and (6) there is great tendency to relapse. To one who has tried this kind of treatment and then tried the effects of pressure the contrast is most marked. Pressure, to act most efficiently, must be uniform and should be applied as early as possible in order to check the flow of blood from the injured vessels, which appears to be the cause of the early swelling of the joint. There is nothing better for the purpose than the starched bandage with a good thick layer of wool to completely envelop the joint. The effect of such treatment is as startling as it is satisfactory. The pain is immediately lessened, the swelling is arrested, the subsequent improvement is far more rapid, and there is less tendency to relapse. Uniform pressure acts mainly by lessening extravasation, and certainly the other results follow.

But pressure acts in another way. The more swelling there is the greater will be the interference with all movements of the joint, and, further, the greater the distension and the longer it continues the more relaxed will be the tissues, and so there will be a greater tendency to relapses. If pressure has been well applied from the beginning it is astonishing how little real stiffness, as opposed to mere weakness, there is, and it is quite easy to keep the joint from becoming distended when the patient begins to walk about. Some, however, appear to carry the principle of pressure a little too far. The injured joint is put up in plaster-of-Paris and kept in its casing for several weeks or even two or three months. This is going to the opposite extreme. The joint when set free is very stiff and often exceedingly weak.

I cannot do better than briefly describe the course I have adopted of late in severe sprains of the ankle. As soon as possible I cover the joint with a stiff starched bandage over a thick covering of wool. The limb is kept raised and at rest. At the end of a week I slit up the bandage, examine the joint, and move it as far as it will go in all its movements. It is no uncommon thing then to find that almost all swelling has disappeared and that the movements are fairly good. If the injury is very severe I place the joint back in the original covering, apply over it a fresh bandage, and have that starched. This at the end of another week is again slit up and the joint moved about freely. In slighter cases I re-apply the old cover and simply put a bandage over it. This is undone every day and the joint well worked. When from ten to fourteen days have elapsed from the date of the injury I allow the patient to begin to walk, and the distance covered is increased every day. After three weeks I make the patient use a well-known orthopædic exercise which consists of alternate flexion and extension of the ankle joint with rotation of the foot. It is no uncommon thing to have such a case practically well in a month and absolutely free from stiffness and weakness in six weeks. There is no tendency to relapse. For a severe sprain of the ankle such a result is satisfactory.

Knowsley.

ISOLATION IN SCARLET FEVER UNNECESSARY AND INEXPEDIENT.[1]

BY ARTHUR WIGLESWORTH, L.R.C.P. LOND., M.R.C.S ENG., L.S.A.

I HAVE on several occasions called your attention to the great value of carbolic acid in the treatment of scarlet fever, for in my hands it has proved a specific for that hitherto much dreaded zymotic disease. Without troubling you again with details I may summarise the results by stating that if I saw my patients in the *initial* stage of the disease they all recovered; that I have had only three cases of albuminuria, all transient in duration; only one of glandular suppuration; and all other usual sequelæ have been characteristically absent. Finally, all the patients have recovered in a remarkably short space of time and with but little enfeeblement of strength. This treatment consists in administering to all patients, so soon as scarlet fever is suspected or diagnosed, from one to six grains of carbolic acid (according to age) freely diluted with water and continuing it every two hours until the rash has finally disappeared, and then reducing the dose and frequency of administration until convalescence has been fully established. This practice I have pursued for over sixteen years and each succeeding year confirms my opinion of its inestimable value.

The subject of this paper has, however, only recently forced itself upon my attention, and was chiefly due to a perusal of Flügge's work on Micro-organisms, which has given me a scientific basis to work upon. It is to this scientific

[1] The above paper was read before the Liverpool Medical Society nearly four years ago. Subsequent experience has amply confirmed these views so far as practical observation can demonstrate their truth. Considering the rapid multiplication of bacteria, as stated by Cohn, it is imperative that the administration of the acid should commence immediately on the outset of symptoms leading even to a suspicion of scarlet fever. The complete success of the treatment will depend on a strict observance of this rule.—A. W.

basis, founded upon pathological experiments, as described in that work, that I desire to call attention. I may premise that it was not till some years after I commenced the use of carbolic acid that I was led to adopt my present views and prepared for this latest development. The first stage was to administer carbolic acid as a possible prophylactic; and it arose in this way. Two children in a family were attacked with scarlet fever, and it was found quite impossible to isolate them from the rest of the children—three in number—because there were only an elder sister and the mother to attend to the wants of the entire household. I put this sister and the other two upon two-grain doses of carbolic acid administered twice a day, and the freest communication existed between the inmates of the sick chamber and the rest of the household. The result was eminently satisfactory; none of the rest took the infection, though about three years afterwards they were attacked, showing that there was a susceptibility to the zymotic poison.

With the experience thus gained I decided to pursue this line of prophylactic treatment in all subsequent cases, giving carbolic acid to those not infected, and then allowing the freest communication between the attendants in the sick room and the other inmates of the household; but not allowing uninfected children to enter the sick chamber. The results of this treatment were remarkably striking. I found that most of the household escaped infection altogether but they not infrequently had an attack in after years. That those who did take scarlet fever invariably—there is not a single exception—took the infection in a milder form, and in only one instance did a sequela occur; finally, that after disinfection no other cases ever arose unless imported from a fresh source. I concluded, therefore, that there was some special effect produced upon the unknown micro-organism of scarlet fever which rendered it much less virulent, and this view seemed to me to receive a measure of support from the fact that whenever a patient had taken a certain quantity of carbolic acid a peculiarly dark colour of the urine appeared (which I now look upon as indicative of "carbolisation" having been effected), and that when this was produced the urine would remain free from the usual putrefactive changes from a week to a month, and if it occurred ultimately the usually highly offensive ammoniacal odour of putrid urine was almost absent. It was not, however, until I had read Flügge's work that many points which I did not understand were made clear to my mind, and thenceforward I entered upon a new course—namely, *that of abandoning isolation*—hitherto with highly successful results. My plan, therefore, is to first carbolise my patient with doses according to age, and at the same time to put all the uninfected members of the household on carbolic acid, and when the characteristic hue has become manifested in the urine of the patient to introduce into the sick chamber the other children, allowing them free access to the invalid until desquamation is completed and the house disinfected. Before, however, giving details of cases in support of this unusual procedure I must give the following few extracts from Flügge's work concerning bacterial attenuation, which determined me to pursue my present course. "The loss of the fermentative or pathogenic properties (in micro-organisms) is shortly termed the '*attenuation of the bacterium*.'" "The vital phenomena which are in this way lost (as far as has yet been ascertained) are only the power of producing fermentation and that of exciting disease." "The smallest degree of injury which micro-organisms can experience as a result of external influences consists in the disturbance of their complete development." "Minute departures from the normal conditions of existence often lead to a cessation of some one biological function. Thus by alterations ..... we may have cessation of the swarming power, of the secretion of peptonising ferments, of the fermentative action, &c.. whilst growth multiplication and all other vital phenomena remain unaltered." "Their power in producing disease also may be influenced by similar trivial alterations in the conditions of life, and may be even temporarily removed ..... for example, by *small doses of specific poisons* we might be able to neutralise the superiority of the pathogenic bacteria over the cells of the animal body." "By noxious influences of definite intensity we may so alter many bacteria that they lose certain of their vital functions." "The noxious factors which are suitable for this action are less energetic than those which cause complete death of the bacteria; on the other hand, the effects are more marked than in the case of inhibitory means, which only exert their influence so long as they are present in the nutrient substratum." "At times, however, the greater effect necessary for *attenuation* can be produced by sufficiently long-continued action of the milder means." "When properly regulated, various chemical poisons are able to produce a permanent attenuation." Pasteur, writing on "The Attenuation of Bacteria" by chemical means, says: "*Each cultivation* of the attenuated bacterium is a *vaccine* for the more virulent—that is to say, a virus capable of producing a more benign malady." "The bacteria attenuated by antiseptics, whether they give rise to spores or not, preserved their *diminished virulence* through repeated cultivations" "It would seem, therefore, that the new (or attenuated) virulence of the varieties of bacteria thus produced is the better fixed the more gently the modifying influence acts upon them." These, then, are general principles concerning the attenuation by chemical agents of those bacteria which cause disease.

The next point to which I would briefly direct attention is an important one to the subject in hand—viz., the action of carbolic acid as an "attenuator" and "bactericide" upon a given bacillus. The anthrax bacillus, observes Pasteur, has been experimented upon more than any other—the one best studied. It is one comparatively easy of cultivation, has marked and distinctive characters, and is one of the *most resistant* of the bacillus tribe to inhibitory influences, and being a facultative parasite affords every facility for experimental observations; hence its behaviour under the influence of carbolic acid is of very great importance, because this acid alone of all the more powerful germicides is one that can be given in large and repeated doses, and these can be continued for a lengthened period of time without producing any deleterious effects upon the system or its organs, unlike many of the mineral and organic germicides. In all the experiments made on the anthrax bacillus it should be borne in mind that its cultivation was made in the most nutritive fluids—i.e., those that were the most favourable for the growth, multiplication, and development of its virulent powers—and that the varying proportions of the carbolic acid were added to these fluids. Therefore, the bacillus had advantages conceded to it which were foreign to its habitat in the animal body, whilst conversely a certain but unknown percentage of *dis*advantage accrued to the germicidal powers of the carbolic acid, because when this special form of nutrient material is withdrawn the carbolic acid acts with far greater energy. There is a considerable difference, however, exercised on those anthrax bacilli which have spores and those free therefrom Bacteria free from spores are completely and rapidly destroyed (not attenuated merely) by a very small proportion of carbolic acid, being killed in a few minutes when from 0·25 to 0·5 per cent. is added to the nutrient fluid, whilst from a 4 to 5 per cent. is required to destroy its spores in from twenty-four to forty-eight hours. Gärtner and Plagge, however, found that a 3 per cent. solution was required to destroy the non-spore-bearing anthrax bacillus, but that this was accomplished in eight seconds, and a 1 per cent. solution caused their rapid disinfection. All experimenters, however, agree that carbolic acid is a very efficient bactericide.

The next series of experimental results to which I would direct attention is the *amount* of carbolic acid necessary to attenuate this very resisting bacillus. Koch found that there was a distinct hindering of growth when $\frac{1}{1250}$ of acid was added to the nutrient fluid, and that a complete cessation of growth occurred when the strength was increased to $\frac{1}{850}$. In these experiments it was found that the "action of the antiseptic was to diminish the virulence of the bacterium," and by continuing these experiments, by cultivations taken at lengthening intervals from the original flask containing the antiseptic, it was found that decreasing virulence was exhibited until an attenuated virus was produced capable of preserving animals from a fatal form of anthrax—i.e., a *vaccine* was the resultant. All these experiments were made outside the body, and under the most favourable circumstances for the growth and strength of the bacillus, but a great difference was observable when it was taken direct from the blood and then exposed to the action of the antiseptic. For instance, Koch observes that bacterial filaments taken from a virulent drop of blood in a case of anthrax soon perished when placed in a solution of carbolic acid of $\frac{1}{600}$, though, if a similar drop was put into the nutrient broth and carbolic acid of the same strength was added, the bacilli lived and grew therein. Lord

Lister, in his observations, has found that normal blood serum is by no means a favourable soil for bacterial growth, and he states that he has returned to the use of carbolic acid for disinfecting purposes. So much, then, for the definite and decisive experiments with carbolic acid on the anthrax bacillus, but in drawing comparative reasoning between its action on this bacterium and its supposed action on that which causes scarlet fever we at once pass from the domain of fact into the region of theory. Nevertheless, I think it may be taken for granted that the same general laws which govern the attenuation and ultimate destruction of the known bacteria, though outside the body, will also govern, in a measure, these effects in the unknown ones, especially if their usual zymotic effects in a certain measure correspond. Nevertheless one naturally feels at a grave disadvantage from the fact that a scarlet fever bacterium has never been discovered. Still, I think no one doubts in these days its absolute existence, and that it partakes naturally of a virulent character, often modified, however, by a variety of unexplained circumstances.

Bearing in mind the potent action of carbolic acid on anthrax bacilli outside the body I was anxious to discover what amount would have to be given to a patient suffering from anthrax provided the effects were similar, with a view of ascertaining if there were any similarity of dose between what would be required in this disease and in that of scarlet fever, the dose being regulated to cause (1) a hindering of growth of the bacterium; (2) to cause a cessation of growth; and (3) to kill outright; for I concluded that if there were anything like unity in amount my success in my prophylactic treatment would be accounted for. I therefore had a table prepared, based, first, upon the weight of the body. I then allowed $\frac{1}{10}$ for the average amount of blood contained therein, and calculated therefrom the approximate amount of carbolic acid that would have to be administered to produce the three separate effects described; and afterwards compared the doses with the one that I was in the habit of giving to my patients suffering from scarlet fever at varying ages.

TABLE I.—*Table showing the Effect of Carbolic Acid on Anthrax Bacillus, and Compared with the Amount of Carbolic Acid given in Scarlet Fever.*

Average weight of body in children and adults.	Amount of blood, $\frac{1}{10}$ of weight of body.	Amount of carbolic acid given in scarlet fever in 24 hours.	Number of grains to hinder growth in anthrax bacillus $\frac{1}{1000}$.	Number of grains to destroy growth of anthrax bacillus $\frac{1}{1000}$.	Excess or deficiency. To hinder growth.	Excess or deficiency. To destroy growth.
st. lb.	lb.	Grains.				
3 3	3½	30	19¼	28½	+ 10¾	+ 1½
4 1	4½	36	25	36	+ 11	0
7 4	7¼	60	43½	64	+ 16½	- 4
8 0	8½	60	48	70	+ 12	- 10
9 13	10½	60	60½	88½	- ½	- 28½
10 8	11½	60	61½	92½	- 4½	- 34½

In the above table the amount required to kill the anthrax bacillus is omitted, being too large to administer to a patient; but it should be borne in mind that the bacillus was placed under the most favoured conditions to establish robust growth, that it had not the vital antagonistic condition of the blood to contend with, and hence a much larger quantity of carbolic acid was necessary to produce the above results. It will be perceived that to a child from three to five years of age I gave thirty grains of carbolic acid in twenty-four hours, which would be ten and a half grains *more* than is requisite to effect the hindering of growth of the anthrax bacillus, and one and a half more than suffisient to stop its growth. In children from eight to ten years, averaging 4 st. 1 lb., thirty-six grains would be the amount given in the twenty-four hours, being eleven and a half more than necessary to effect the first purpose on the anthrax bacillus, and just sufficient for the second. Coming to those weighing 7 st. 4 lb., the average weight of young people, the dose to scarlet fever patients would be increased to five grains, or sixty in the twenty-four hours; and here we have plus sixteen for the first purpose and minus only four and a half for the second. It is not till we come to 9 st. 13 lb. that the amount given is barely sufficient to hinder growth, and twenty-eight and a half grains *less* than necessary to stop it altogether. In a person weighing 10 st. 8 lb.—the highest calculation made—there is only a deficiency of four and a half grains in the first column, but thirty-four and three-quarters in the second.

This table, of course, is but a basis upon which to ground certain broad inferences as to dose and effect; but I venture to think that the nearness of the dose in the first few years of childhood is of great value, demonstrating, as it does, that in the case of the anthrax bacillus its virulence would be seriously impaired by a dose smaller than that given in scarlet fever, and by analogical reasoning (on the ground that the bacillus of anthrax is of a very resisting nature) we might be justified in assuming that a very much smaller dose would be required to produce a far greater effect on the scarlet fever bacterium. There is, however, a very important point to be noted in the above table, and one apparently fatal to any conclusions we might wish to draw therefrom, and that is, that in the case of the anthrax bacillus the requisite quantity of carbolic acid required to produce the various effects described in the experiments is added at once in its entirety with the nutrient material, whereas in scarlet fever it is divided into twelve parts, and these distributed over twenty-four hours. This apparently fatal objection is met from several points of view; first, I think, there are good grounds for believing that the scarlet fever bacterium has much less resisting power than that of anthrax, and I am led to hold this opinion by observing the condition of the urine in a thoroughly carbolised patient. It must surely be conceded that there is some very powerful germicidal influence at work when the putrescent decomposition of urine—passed by a person suffering from this zymotic disease—is in many cases delayed for several days, and, secondly, prevented from assuming that highly offensive odour (so well known to us all), however long it is kept. We can hardly assert that there is a less antiseptic condition of the blood than of the urine, and if the blood is in this condition it must surely prove, in a great measure, inhibitory to bacterial growth and activity, remembering that "their power to produce disease may be influenced by a trivial alteration in the conditions of life." Then, though we know nothing concerning this bacterium, there is the ascertained fact that a person taking scarlet fever from a carbolised patient *invariably* has a milder attack, demonstrating that a feebler micro-organism has come into existence; and as it is reasonable to assume that the anthrax bacillus is of a more virulent type than that of scarlet fever a much smaller amount would be required to attenuate it—i.e., diminish its virulent power. Then we have to remember that the vital condition of the blood (that vital condition which is termed its life and exists only during the life of the animal) has an inherent antagonism to bacterial growth, therefore with the aid of a germicide of even feebler power than that used in experiments outside the body, bacterial activity would be still further hindered; and it has been proved by experiment that it takes one-third less of carbolic acid to destroy bacterial filaments taken direct from the blood than is required for those grown in nutrient broth, and so we at length get within a measurable distance of a much more moderate dose to effect the attenuated and germicidal powers required by my table than is required for the anthrax bacillus.

There is one other remaining point of importance to be noted. Cohn states that bacterial increase by the usual method of fission is so great that if only two were produced from one bacterium every hour their multiplication would amount to the almost incredible number of 4772 billions in three days. Further observation proves that this fission occurs every twenty minutes. Now each of these, whether more or less in number, would be produced in a fluid antagonistic to bacterial growth, and not under circumstances which would probably weaken the germicide ultimately, but in a fluid which would every two hours be subject to a renewal of the germicidal power. Hence this progeny would in time become "attenuated"—i.e., lose more or less the power of exciting disease, and if not completely attenuated would nevertheless have diminished virulent powers, and so approach that attenuated virulence called a "*vaccine*"; for, as Pasteur remarks, "each cultivation of the attenuated bacterium is a 'vaccine' for the more virulent—that is to say, capable of producing a more benign malady." Why, therefore, should we acknowledge the power of carbolic acid to attenuate and bring into the condition of a "vaccine" the progeny of the anthrax

bacillus and deny the same power in the case of the bacterium of scarlet fever?

Such a line of argument would appear to me to be somewhat untenable, contrary to scientific truth, and irrational. I think, therefore, I am fully justified in my belief that carbolic acid given in scarlet fever *does* produce a virus capable of exciting a more benign malady, and without having absolutely witnessed with the physical eye the attenuation of the scarlet fever bacterium by carbolic acid, I contend that the results I have obtained do by analogical reasoning justify my assumption that such is produced, and that the bacterium so attenuated is, in fact, a "vaccine" endowed with all the beneficial results that accrue to such attenuated cultivations. In full confidence of these results ensuing I assert that isolation in scarlet fever is both unnecessary and inexpedient, and have in consequence given up isolating my patients, and feel that I am fully justified by the results of this method in the following cases.

CASE 1.—This case was certainly one of the most unfavourable for experiment. The father of the children suffered from curvature of the spine, and therefore a tuberculous tendency in the children would probably be inferred. The mother was of the sanguine type, highly nervous, and constitutionally delicate. All the children were of the blonde type—thin, pale, lymphatic, always requiring cod-liver oil. The two elder ones had taken scarlet fever some two years previously, when all of the others were carbolised and isolated, and escaped infection. Last year in a fresh locality one of them contracted scarlet fever from that hotbed of zymotic contagium, the board schools. I immediately gave the child carbolic acid, also the remaining two, and on the second day instructed the mother to bring the unaffected children into the sick room. The next day I learnt that they were so terrified that they could not be induced to enter. However, on urging the matter strongly they occupied the chamber, with the result that both took scarlet fever. The first day the pulse and temperature ran high, but on the second the attack suddenly collapsed, and the children were well somewhat more rapidly than usual. In this case had not my confidence in the value of carbolic acid been unassailable I should have had doubts about the wisdom of the procedure (when I found the initial stage so violent), but I was able to assure the mother, who was much frightened, that all would end favourably, and she subsequently acknowledged the wisdom of the proceeding.

CASE 2.—This case was equally instructive. On a former occasion two out of a family of four contracted scarlet fever, the remaining two took carbolic acid, were isolated, and escaped. Last year, in a new house and locality, one of these contracted the disease. The child was duly carbolised and then the other, semi-carbolised, was admitted to the room, spending all the day there, and this was continued until a prolonged desquamation was completed and the house disinfected, yet this fourth child was never attacked.

CASE 3.—Scarlet fever broke out in a house where there was a family of five children, only one of whom had previously been attacked some three years before. After carbolising the patient, and giving the uninfected ones carbolic acid, these were admitted to the room, and remained in it the greater part of the day. One child only, one year old, did not take the acid. All have remained free from attack. Singularly the one who had previously been infected did not take any medicine, and she was attacked with a slight diphtheritic sore-throat.

CASE 4.—I saw a patient suffering from scarlet fever in a family of six. After carbolising the patient, and giving the remaining five the acid, they were all allowed in the room on the second day, and I saw three of them on the bed together on one of my visits. Nevertheless, none of them took it. The house was disinfected, and no further outbreak has occurred. This was six months ago.

CASE 5.—A child, aged eight years, took scarlet fever, and in thirty-six hours the urine showed that she was carbolised. The next day a child barely two years old was attacked, and one and a half grains of carbolic acid was given every two hours. Her urine was soon discoloured. The remaining child, aged four years, took carbolic acid twice a day, played and slept in the room, and so far remains well. The mother had never had scarlet fever, and she also took the acid. There is no evidence of further infection.

So far, then, I have exposed fourteen persons to the direct contagium of scarlet fever and only two have been infected, which is at the rate of about 14? per cent.; and if facts are worth anything for the purpose of demonstrating truths I think I have fully proved that if a patient is duly carbolised from the initial stage (and I make this a great point), and all non-infected persons take small doses of the acid, the risk of infection is very small indeed, and if the contagion does find entrance into the system the attack is invariably mild. Why, then, should we isolate the patient? I contend that it is rather our duty to do all that we can to spread the contraction of this attenuated virus to all the other children in the house, knowing that they will have a mild attack, be immune for the future, and the chance of a prolonged illness is *nil*, whilst that of the appearance of a sequela is about 1 to 1000. But this is by no means all. If they escape infection they may at a later period contract, perchance, a virulent attack with all the subsequent disastrous consequences. One such case is painfully present to my mind.

CASE 6.—There was a family of two only—a boy and a girl. The boy took scarlet fever, was carbolised, and when desquamation was completed the house was disinfected. The girl was semi-carbolised and did not come into contact with her brother until then. Some time afterwards she contracted scarlet fever at school, had the usual vomiting and purging, which the parents attributed to a cold, and she was allowed to go out on a bleak day. The scarlet fever was suppressed and she died a few hours after I was called in.

This case has made me consider the question whether it is quite wise to semi-carbolise the unaffected children at all in a house where scarlet fever has made its appearance, but rather to allow them to enter freely the sick chamber, in the hope that the attenuated virus from the carbolised patient (without being further attenuated in the semi-carbolised) will be sufficient to induce a mild attack, for it is certain that when semi-carbolised the risk of receiving the contagion is very small indeed. On the other hand, we can never be quite certain what response a child's system will make to a zymotic poison. We have all seen mild cases give rise to virulent ones in almost every zymotic. We see it also in vaccination. Two babies apparently alike in physical constitution may be vaccinated from the same vaccine pock, yet on the eighth day one will present a small, well-defined inflammatory area around the vaccine, whilst the other will exhibit a hard indurated inflammation from shoulder to elbow. The introduced zymotic vaccine has been benign in one case, but has produced a virulent type in the other. I have therefore concluded for the future to *diminish* the dose to the unaffected to about one grain, in the hope that this will allow of infection, and, if so, on the earliest appearance to at once give the full dose for scarlet fever. The only exception to this that I think of possibly adopting, after more experience, is that if the first outbreak shows a decidedly mild type to give no carbolic acid to the unaffected, for it shows that we have but a feeble micro-organism to deal with; whereas if the first case shows anything like the virulent type then full semi-carbolism should be at once adopted.

The more, then, we isolate the uninfected the less chance is there of this attenuated bacterium taking up its abode in them and producing a more benign malady, and so protecting them for life. Hence isolation is quite unnecessary. And it is inexpedient. True, I have laid it down as a law not to be broken that the semi-carbolised children when mixing with the enfeebled patient shall not hold any communication with others foreign to the household, and that the open-air exercise necessary for them shall be taken in the garden. Where this is impossible, few gardens existing in overcrowded cities, I have directed those in charge of them to allow no inter-communication with others in the street, and I do this—though it is quite contrary to my theory and belief—because I do not think it right to force my opinions, however beneficial they may be, upon others. Nevertheless, I hold that the more freely the contagion from a carbolised scarlet fever patient is diffused the better it will be for the welfare of the community at large, and if this course is universally adopted scarlet fever will in time be no longer the dreaded zymotic it is at present. I am quite aware that I am making very startling statements, that deeply-rooted prejudice will both hinder and thwart the inauguration of this plan of treatment, that many will look upon it as absolutely Quixotic, and that it will take a long time to overcome both professional and public sentiment, so dreaded is the very name of scarlet fever. Nevertheless, scientific therapeutic medicine must prevail in the end.

Liverpool.

A CASE OF SPONTANEOUS ANEURYSM OF THE RADIAL ARTERY IN THE TABATIÈRE: TREATMENT BY EXCISION OF THE SAC; RECOVERY.

BY ROBERT BRAMWELL SMITH, M.R.C.S. ENG.

ON Jan. 25th, 1896, I was called to see a woman who was suffering from hemiplegia of the right side. Speech and deglutition were affected. I was told that two weeks previously she had had a stroke whilst engaged in household duties. On examining the right arm I noticed a fluctuating swelling about the size of a large marble in the space known as the "tabatière anatomique." Near the back and outer side of the wrist joint this swelling had all the classical signs of an aneurysm. After about three months treatment by rest and the administration of iodide of potassium the patient improved so much that she was able to use her limbs fairly well and her speech gradually returned. I then elicited the following history:—She was fifty-seven years of age, married, of mixed Spanish and English blood, and a dressmaker by occupation. At the age of fourteen years she had had her right leg amputated at the knee for incurable disease of the foot. She had had fourteen confinements at full term, the forceps being used in every case. Twice craniotomy had been performed and twelve children were born alive. Nine of the children were then alive and all were apparently healthy and of adult age. Two had died in youth from scarlet fever and one from bronchitis. She had had no miscarriages and there was no history of syphilis. At the age of twenty-seven years (thirty years previously) she had had a "stroke." Paralysis of one side followed and she lost her sight for ten days. This occurred a fortnight after one of her confinements. On examination a well-marked systolic bruit was to be heard at the junction of the sternum and the manubrium, which was conveyed along the carotids with great distinctness. On passing the finger-tips over the vessels of the neck the peculiar rosary-like feel of atheroma was experienced. Not the slightest sign of degeneration could be detected by the fingers in either the brachial, radial or ulnar arteries of either side. Arcus senilis was well developed. The patient first noticed the swelling at the wrist about five years previously, her attention being drawn to it by the uneasy sensation produced when she used her scissors. There was no history of injury whatever. I had the patient under observation for the rest of the year 1896. On March 18th I began to treat the aneurysm as the patient felt a great deal of pain proceeding up the arm from the swelling. Pressure over the radial artery above the sac together with pressure below and upon the sac by means of an elastic bandage was applied on three different occasions for some hours each time and discontinued when pain was too severe for the patient to bear. Pressure was kept up on the radial artery in the intervals. At the end of three weeks the pulsations had ceased altogether in the sac. Unfortunately, the cure was not permanent; probably from voluntary movement of the thumb the clot was disturbed and pulsation began to show itself. Rather strangely, at the time that the pulsation was noticed the patient had a third, though slighter, attack of hemiplegia. In addition to the paralysis there were several shorter attacks of spasm of the muscles of the arm on the affected side. The arm was brought round and the muscles were held in a condition of tonic contraction. There was well-marked anæsthesia all down the right side. The symptoms of paralysis left her by November, when she was persuaded to see Mr. Thomas Jones at the Manchester Royal Infirmary and he advised excision. As the patient now had great pain and as her hand was useless I determined to operate after showing the case at a meeting of the Manchester Medical Society. On Dec. 26th the patient was put under chloroform and the brachial artery being controlled by digital pressure I made an incision of three inches in length directly over the swelling. The superficial structures and fascia were cut through and several large veins were cut and clamped. The sac was exposed, occupying the space between the tendons of the extensor ossis metacarpi pollicis, extensor primi internodii pollicis, and extensor secundi internodii pollicis, passing under the latter tendon. After some dissection, owing to the tumour extending into the substance of the abductor indicis two branches were seen proceeding from the distal end of the sac, one being probably the continuation of the radial artery to the deep palmar arch. These, and the radial artery itself, which was much enlarged, were tied with recently boiled silk, and the wound was sutured with silkworm gut. No drainage tube was used, and the wound was dressed with Lister's double cyanide gauze.

Two weeks after the operation the wound had healed by first intention, except where one suture had been disturbed. In three weeks the wound was healed and the patient, contrary to my advice, was at work with her machine. Within a month she had done a day's washing. The aneurysm was of about the size of a large marble or a chestnut and of the sacculated variety. It was partly filled with a firmish white clot. The points of interest are: 1. The rarity of non-traumatic aneurysm in the radial artery. 2. The absence of any satisfactory reason for the formation of an aneurysm in such situation. My own opinion is that the aneurysm was due to embolism and probably dated much further back than the period of five years during which the patient had noticed it. I believe the increased prominence of the symptoms were due to degenerative changes peculiar to the patient's age and that nature was attempting a cure in an imperfect way. I cannot help thinking that the clot in the sac being disturbed had something to do with the second and third attacks of hemiplegia. 3. The advantages of excision in accessible cases over other methods. The patient was a most unpromising subject for operative measures or chloroform narcosis, yet she made a perfect recovery without a single bad symptom.

Manchester.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTES ON A CASE OF CHOLESTEATOMA OF THE ATTIC OF TWENTY YEARS' DURATION SIMULATING DISEASE OF THE MASTOID PROCESS.

BY ADOLPH BRONNER, M.D.,

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A STRONG, healthy man, aged thirty-one years, saw me in January, 1896. There had been a discharge from the right ear for more than twenty years. Three times (ten, six, and two years ago) there had been a large, painful swelling behind the ear, which was incised. Frequently during the last few months there had been severe attacks of pain in the ear, accompanied by swelling and tenderness over the mastoid region. When I saw the patient there was an extensive fluctuating swelling behind the right ear, extending downwards to below the mastoid process, and upwards and forwards into the temporal region. The temperature was 101° F. and the pulse was 89. There was a copious, offensive discharge from the ear, and a fairly large perforation of the membrana tympani. On Feb. 5th a large incision was made into the abscess down on to the bone. Some pus escaped. A large quantity of unhealthy granulation tissue was removed by scissors and a sharp spoon. There was no fistula of the mastoid process, but the bone was rough in some places. I opened up the mastoid antrum and surrounding cells, which, to my great surprise, were apparently normal. The incision was then prolonged upwards round the upper part of the auricle, the cutaneous auditory meatus was cut through, and the ear was pulled downwards. The middle ear was thus exposed. A grey soft mass seemed to protrude into the upper part of the middle ear and a probe could be passed upwards for over half an inch. This was evidently the greatly distended attic. The upper wall of the osseous auditory

meatus and the outer wall of the attic were then chiselled away and a cavity the size of a large cherry was exposed, which was filled with soft caseous matter. The walls of the cavity were smooth. The projecting edges were removed and the wound and cavity were plugged with iodoform gauze. The discharge for the first few days was extremely offensive, in spite of the local application of glycerine of carbolic acid and a perchloride of mercury lotion (1 in 100). The wound was plugged from above daily for three weeks and allowed to heal up from below by granulation. In two months the wound had completely healed with the exception of a small fistula above the auricle which was kept open by silver wire. In five months the discharge from the ear ceased. There has been no recurrence of the discharge or swelling. The hearing was so improved that a watch which was heard at a distance of one inch from the ear before the operation could afterwards be heard two inches away.

The interesting features of this case seem to be (1) that the attic had been affected for twenty years and the disease had not spread into the mastoid antrum or cerebral cavity; (2) that disease of the attic should have caused such extensive and repeated attacks of periostitis of the mastoid process; (3) that the cholesteatoma should have formed in the attic and not in the mastoid cells, as is generally the case; and (4) that the wound was kept open and allowed to heal up from below by granulation, as suggested by McEwen and Victor Horsley. The method generally adopted is to try to keep a large permanent opening above or behind the ear.

Bradford.

DEATH OF FŒTUS IN UTERO FROM GUNSHOT WOUND; RECOVERY OF THE MOTHER.

BY SAMUEL WILLIAM ROBINSON, M.D., B.CH. DUBL.,
MEDICAL OFFICER, NORTH-EAST ARGENTINE RAILWAY.

ON the morning of Aug. 25th, 1894, while on a pleasure trip in the country, about fifteen miles from the town of Empedrado, in this province, I was called to see a young woman, aged eighteen years, married eight months, who had been shot in the abdomen. On arrival I found her lying on a bed with two or three women about her, but with very little expression of shock or suffering. On examination I found a bullet wound, made by a fair-sized ball, a little to the right of the umbilicus and slightly below. There was no bleeding more than an odd drop of venous blood for a radius of two inches round the wound; there was extravasation of liquid in the tissues, at the time thought to be blood, but now believed to have been amniotic fluid. The abdomen was very pendulous, as is generally the case with the peasantry of these parts. I gave her opium and sent for instruments in case of necessity. About one hour afterwards labour set in, and went on slowly until 2 o'clock next morning, when, the woman being fairly exhausted and the pains weak, the os being sufficiently dilated, she was delivered by long forceps. The post-partum hæmorrhage being very sharp there was no time to examine the child, which had already begun to decompose. The hand was next passed into the uterus, and an opening in the anterior wall could be distinctly felt, with a part of the membranes prolapsed and held tight in the same. This no attempt was made to loosen, but the membranes were torn off close to the uterine walls, and the hand withdrawn with placenta which was loose in the cavity. The uterus was washed out with hot antiseptic solution (creoline), and ergot was given. On examining the child, which was at almost full time, it was found that the ball had entered the right shoulder by the junction of the acromion process with the scapula, and had come out in the left iliac region, drawing with it a coil of small intestine which was not wounded. As there was but one wound perceptible in the uterus the question arose: Where had the ball gone to? However, this was easily settled, as, on examining the clots, &c., it was found in the débris. The mother made an uninterrupted recovery, her treatment consisting in the application of iodoform to the external wound, which healed without suppuration, as all wounds do which have been made by a bullet having a great velocity (this one had been fired at a distance of three metres), ordinary antiseptic treatment being used. The uterus was washed out twice a day with a solution of creoline. The mother gave birth to a live child in 1895, and must have had little trouble, as she was attended by a native midwife.

Monte Caseros, Province of Corrientes, Argentine Republic, South America.

NOTES ON A CASE OF ASPHYXIA NEONATORUM IN WHICH THE HEART CONTINUED TO BEAT FOR MORE THAN FOUR HOURS WITHOUT THE RESPIRATORY FUNCTION HAVING ACTED.

BY JOHN MACKENZIE, L.R.C.P. & S. EDIN., L.F.P.S. GLASG.

ON Aug. 11th, 1894, I was called to attend in confinement a woman aged forty years. On examination the presentation was found to be occipito-posterior. The os was rigid and the uterine contractions were slow and feeble. The patient, a soft, flabby woman, had been in labour since the early morning (it was then 5 P.M.) and was much exhausted. The os having been dilated, delivery was effected by the forceps. The passage of the fœtus through the parturient canal took about half an hour. The delay was chiefly due to traction being used only during the pains. In the interval the blades were loosely held to obviate the effect of prolonged pressure on the fœtal head. When the child (a male) was born the funis was round his neck, the face was livid, the lips were blue (livida pallida), the heart was beating feebly, respiration was absent, and there was no pulsation in the cord. In the hope of relieving stasis in the fœtal channels the cord was cut and left unligatured, but no blood escaped. Considering this a very grave sign, and to guard against the possibility of mistaking any adventitious sounds for the heart sounds, I carefully auscultated and found the latter to be quite clear. I immediately began artificial respiration, practising alternately Marshall Hall's and Silvester's methods, and douched the infant with hot and cold water, &c. Remembering also Mr. Victor Horsley's advice in cases of arrested respiration from cerebral pressure, I applied hot fomentation to the head, at the same time continuing artificial respiration. For fully two hours I persevered with the ordinary treatment for asphyxia neonatorum, means I had never once seen before to fail with such a regular and even cardiac action; still there was not the faintest sign of respiration. Loth to give up the struggle I resolved on another manœuvre. The child was placed in the recumbent position with the head and neck extended, the tongue was pulled out, the jaws were kept apart, and I gently blew air through his mouth and nostrils. With every effort the chest and abdomen expanded as in natural breathing. Counter-pressure with the left hand on the lower part of the thorax expelled the air with a whistling noise through the glottis. It was noted that counter-pressure on the abdomen alone failed to produce this noise. Soon the heart's action considerably improved, becoming louder and quicker to such an extent that I could easily see its impulse against the chest-wall, yet there was no effort at voluntary breathing, the face and lips remaining the same. Exceedingly puzzled at the phenomenon of a heart beating for hours without the faintest appearance of respiration, the idea struck me that in all likelihood the heart was stimulated mechanically through the terminal filaments of the vagus by air passing along the œsophagus into the stomach, and not as I had imagined by the presence of oxygen in the fœtal blood. To clear up this doubt I managed to pass air into the stomach by means of a small gum-elastic catheter. Whilst doing so the heart beats fell back to the original condition, slow and feeble, just ticking in the distance, but on resuming blowing air through the mouth and nostrils the heart responded and improved as already described. This I did over and over again, and at last in despair (for it was now 10 P.M.), and to my regret, I left the infant who then had a strong, bounding pulse. How long the heart continued beating I am unable to say. I found the child dead next morning.

Remarks.—The above notes were written at the time, three years ago. After reading Sir Dyce Duckworth's paper, read at the Moscow Congress and published in THE LANCET of Sept. 4th, on Cases of Cerebral Disease in which the Function of Respiration entirely ceases for some Hours before that of the Circulation I thought this case of sufficient interest for publication.

Kirkby-in-Ashfield.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

WESTMINSTER HOSPITAL.

A CASE OF RUPTURED HYDRO-ENCEPHALOCELE WITH EXTREME CONGENITAL HYDROCEPHALUS; EXCISION.

(Under the care of Mr. WALTER SPENCER.)

IN the following very interesting case the protruded membranes formed so large a swelling that rupture took place as the child was born; to this rupture is undoubtedly to be attributed the septic infection which occurred. The operation effectually prevented any further loss of cerebro-spinal fluid or any further absorption of septic organism. Removal of these large protrusions is always indicated, but it not rarely happens, as in this case, that the condition of brain which is present is incompatible with the child's continued existence. In many cases the interference with the intracranial pressure which results from the removal of the swelling is the cause of convulsions and death. For the notes of this case we are indebted to Dr. F. Kenneth Wilson, house surgeon.

A female child, aged thirty-six hours, was admitted into Westminster Hospital on Aug. 3rd, 1897. The mother, a primipara, was reported to have been in the second stage of labour, after eight months of pregnancy, when the swelling of the child's head was first perceived. Dr. Sydney Wright, under whose care the mother was, used forceps to deliver the arrested head. When born the tumour was about the size of the child's head. Dr. Wright sent the case to the hospital. On admission the child's head appeared to be of normal dimensions, but the sagittal and coronal sutures, including the posterior fontanelle, were still unclosed to the extent of a finger's breadth, and the occipital bone was in the same plane as the nape of the neck, no occipital prominence being present. Attached to the occipital bone was a soft, fluctuating swelling, somewhat less than one half the size of the head; it was covered with skin of the same thickness as the rest of the scalp. The skin was somewhat bruised and lacerated, and a little fluid was seen to be oozing from one point on the tumour. The child's temperature was 101° F. It was not considered advisable to administer any anæsthetic. Mr. Spencer made an incision round the base of the tumour and turned the skin back; the pedicle was cleared as far as possible, and then it was pinched between the finger and thumb. This pressure caused no disturbance, and no solid matter could be felt in its interior. The pedicle was then transfixed by a round needle carrying a strong silk ligature; the halves of the ligature were interlocked and the pedicle was tied, and another ligature was placed round the pedicle as a whole. The tumour was removed and the flaps which had been raised were drawn together. No more cerebro-spinal fluid escaped. On examination the tumour removed was found to consist of a thin-walled sac with a smooth inner surface; it contained blood-stained serous fluid. The child appeared to be none the worse for the operation and subsequently took milk well and a little brandy. The next day (Aug. 4th), as the temperature had risen to 104°, the sutures were removed from the middle of the wound, but only normal coagulated exudation was found and no pus. During the whole of that day and the next (the 5th) the temperature remained between 102·5° and 104·5°. On several occasions on these two days the child had slight attacks of general convulsions. The temperature remained high in spite of sponging, reaching 104° on the fourth day (the 6th), and on the morning of the fifth day after admission the child died. The intracranial pressure was normal throughout; certainly it was never excessive.

Necropsy.—At the post-mortem examination the parietal bones and the frontal bone were found to be unduly separate but partly ossified. The occipital bone was complete except for an opening admitting the thumb at the junction of the inter-parietal and supra-occipital elements of the bone. On opening the skull the two hemispheres formed distended sacs with very imperfectly marked convolutions. Between the hemispheres was the roof of the third ventricle of the usual reddish colour. This roof of the third ventricle extended backwards over the corpora quadrigemina, and was constricted at the tentorium, the opening in which was of the usual size. On opening the posterior fossa all that was at first seen was a distended sac formed by the roof of the fourth ventricle. As the middle lobe of the cerebellum was absent, the roof of the fourth ventricle was attached to the opening in the occipital bone corresponding with the ligature of the pedicle on the exterior. The large sac, which consisted therefore of the dilated third ventricle, the aqueduct of Sylvius, and the fourth ventricle, contained a greenish serous fluid without any sign of exudation, pus, or fibrin. In this brain were absent the corpus callosum, the fornix, the roof of the aqueduct, and the vermis of the cerebellum. The stage of development in which the arrest had taken place corresponded to one of His's drawings of a fœtus of two and a half months, reproduced in Quain's "Anatomy."[1] The hydro-encephalocele was therefore a protrusion from the roof of the fourth ventricle in the position usually occupied by the middle lobe of the cerebellum. It is remarkable that the skull should have been so well formed, being, except for the aperture in the occipital bone, the skull of an infant in the eighth month of pregnancy. The high temperature had commenced before admission, and was apparently due to general septic infection, as there was no evidence of inflammation about the wound or within the skull. The operation did not appear to affect the child at all. The care that was taken to ligature the pedicle of the tumour prevented any further loss of cerebro-spinal fluid.

JAMSETJEE JEJEEBHOY HOSPITAL, BOMBAY.

A CASE OF OBSTRUCTION OF THE PYLORUS FROM SPASM OF THE SPHINCTER; LORETA'S OPERATION; RECOVERY.

(Under the care of Surgeon-Lieutenant-Colonel W. K. HATCH.)

DIGITAL dilatation of the pylorus, or Loreta's operation as it is usually called, has been used in a fair number of cases, but it is less frequently employed at the present time than it was a few years ago. When the stricture of the pylorus is very rigid the dilatation by the finger is rather apt to cause rupture of the wall with a fatal result, and even when the dilatation has been effected with safety re-contraction of the pyloric orifice may occur and lead to obstruction at that point as early as the fifth day.[2] For these reasons Loreta's operation has been in great part replaced by pyloroplasty, or the Heineke-Mikulicz operation. In the following noteworthy case spasm of the sphincter may have been, as Surgeon-Lieutenant-Colonel Hatch suggests, the cause of the obstruction, but the stenosis may have been due to cicatrisation of a small shallow ulcer, possibly traumatic in origin.

The patient, a Hindoo, twenty-eight years of age, was admitted into the medical wards of the hospital under the care of Surgeon-Captain Childe on July 6th, 1897, and was transferred to the surgical wards on Aug. 6th. He had been treated during that time medically, but with no improvement, and an operation was advised. He stated that he had suffered from burning pain in the epigastrium and vomiting at night for the last two years, and had consulted several qualified and unqualified practitioners, but had received no benefit; previously to this his health had been good. He attributed his illness to the fact that he was unable to get sufficient food during the day, but drank large quantities of water; in the evening he had his food about 8 P.M., and at midnight he usually commenced to vomit a considerable quantity of water and particles of food; this was followed by a burning pain in the epigastrium. When admitted into the surgical wards he was thin and weighed 89½ lb., but was not anæmic. The pulse was small and regular, the tongue was coated and fissured, and the gums were spongy. He

[1] Tenth edition, vol. i., part i., p. 60.
[2] THE LANCET, Jan. 9th, 1892, p. 87.

said that he felt extremely miserable on account of his prolonged illness and would be glad to die. Vomiting and burning pain at the epigastrium were the two symptoms of which he complained. The lungs and the heart were healthy and the liver was not enlarged. The abdomen was concave and the muscles were thin and flaccid; after food it became somewhat distended below the left costal border. No tumour could be felt, though the weakness of the abdominal muscles allowed every part to be easily examined. The stomach was found by percussion to be somewhat enlarged, but succussion sounds were not elicited. The appetite was rather increased, but there was no vomiting during the day. He was fed at 9 A.M., 2 P.M., and 6 P.M. About two hours after this last meal he usually complained of giddiness and eructations; this was followed by vomiting, about two cupfuls of fluid altogether, and was succeeded by pain of a burning character in the epigastrium. The bowels were constipated, the stools being hard and scanty. No blood had ever been vomited or passed by the bowel. On Aug. 11th the patient was chloroformed and a longitudinal incision three inches long was made in the linea alba, beginning an inch below the ensiform cartilage; the stomach at once presented. Examination of the pyloric end and of the duodenum did not clear up matters, the parts appearing to be perfectly healthy. Surgeon-Lieutenant-Colonel Hatch therefore opened the stomach near the pylorus and, introducing the finger, examined carefully the mucous membrane in all directions. Search was then made for the pyloric opening, but it was so tightly closed that for some time no opening could be discovered. At last a slight slit-like depression could be felt, and the finger being gradually pushed against this forced open the sphincter, which was then forcibly dilated; a ring-like constriction which gradually gave way was felt, but no real hypertrophy could be distinctly made out. A second finger could not be introduced, but the single finger moved freely from side to side. The stomach and abdominal incisions were then closed. From that time the vomiting and other symptoms ceased and the patient made a satisfactory recovery, the wound healing soundly. He now takes the same food as ordinary patients and has regained his strength to a considerable extent. He was not allowed to sit up for a month, and solid food was given for the first time fourteen days after the operation. The temperature rose to 100° F. on the evening of the operation, but fell next day to normal, and continued so until the present time, the patient being now perfectly well.

Remarks by Surgeon-Lieutenant-Colonel HATCH.—Native patients, particularly Hindoos, are very reluctant as a rule to undergo any abdominal operation, and the fear of this generally prevents them from coming to hospital even in cases of intestinal obstruction until their friends have tried all ordinary medicines. Consequently our statistics in abdominal surgery do not show very satisfactory results as compared with those of English hospitals. It was only when this man was tired of his life that he applied for relief, and I believe this case to be the first in which Loreta's operation has been performed in Bombay. As no ulcer or growth was met with I conclude that this was a case of pure spasm of the pylorus, and I may remark that ulcer of the stomach is extremely rare in Bombay either in males or females; only once have I met with a case of perforating ulcer, and in that instance I operated unsuccessfully. Although anæmia and disorder of digestion are very common among native females, the rarity of ulcer in India as compared with its frequency in England is extremely interesting.

LEEDS GENERAL INFIRMARY.

A CASE OF LIGATURE OF THE EXTERNAL ILIAC ARTERY FOR ANEURYSM BY THE TRANSPERITONEAL METHOD.

(Under the care of Mr. W. H. BROWN.)

THE introduction of the transperitoneal method of ligature of the iliac arteries was due to Dr. Dennis, of New York.[1] Among its advantages are the less danger to the peritoneum and other structures that it entails, the greater ease with which the operation can be performed and the choice which it gives to the surgeon of the best position for the ligature. In many cases also the older incision is rendered exceedingly difficult by the presence of the aneurysm for which the ligature of the artery is required. There is in the transperitoneal incision certainly the added risk of sepsis in the peritoneal cavity, but with even ordinary care this risk is slight.

A man, aged forty-five years, was admitted into the infirmary suffering from an aneurysm situated at the junction of the external iliac and the femoral arteries. The aneurysm was about the size of a hen's egg. Under ether Mr. Brown opened the abdomen in the line of the external iliac artery, cutting through the peritoneum. He tied the vessel midway between the bifurcation of the common iliac and Poupart's ligament, a silk ligature being used. Pulsation was immediately stopped. The peritoneum was then stitched together and the abdominal wound closed in the ordinary way. The patient made an uninterrupted recovery and is now walking about.

Remarks by Mr. BROWN.—This is the second time that I have had occasion to tie the external iliac artery for aneurysm, and in each case I have operated by the transperitoneal operation and with a good result. I think the method has many advantages over the older operation, and provided strict cleanliness is maintained is not more likely to be attended with disaster. In both cases the ordinary operation would have been difficult, if not impossible, owing to the position of the swelling.

[1] New York Medical Journal, 1886, No. 20.

Medical Societies.

PATHOLOGICAL SOCIETY OF LONDON.

Presidential Address.—Posterior Basic Meningitis of Infants.—Multiple Spontaneous Fractures.—Exhibition of Specimens.

THE first meeting of this society for this session was held on Oct. 19th, the President, Dr. J. F. PAYNE, being in the chair.

The PRESIDENT, after thanking the members of the society for electing him to the chair, referred to the objects of the society. He said that some had criticised the name of the society, holding that the term pathology is much too wide for the subjects which come under its notice. But the association of the idea of morbid anatomy with the term pathology, although regrettable as giving an incomplete view, is so bound up with medical literature of the past that it is difficult to see what other name could have been given to it by its founders and no one could reasonably propose that the name of the society should now be changed even if a more appropriate one could be selected. The limitation of topics is largely due to the fundamental rule of the society that except in rare instances no communication should be received which is not accompanied by a material specimen of some kind, a rule assuring greater authority and trustworthiness in the communications which are admitted. The advantages of this rule have been recognised by other societies, and the demonstration of experiments and the exhibition of living cases have become established institutions. The study of disease or pathology in its widest sense has always rested on two foundations—(1) the study of the material changes which are found associated with disease either as cause or effect; and (2) the study of the dynamical or functional changes. These two lines of thought may be more or less clearly distinguished through the whole history of medicine, sometimes one and sometimes the other being predominant. One may be called the anatomical school and the other the functional or dynamical. The Pathological Society belongs to the anatomical school. The utility of the study of material changes in the body has been questioned by some eminent men both in ancient and modern times. Even Sydenham was in opposition to, or at least out of sympathy with, the anatomical school. He avowed that he had never devoted himself to minute investigations in anatomy, which he considered to have no application to the art of healing; and of pathological anatomy he speaks with something like contempt. He says: "Others have more pompously and speciously prosecuted the promoting of this art by searching into the bowels of dead and living creatures to find out the seeds of disease destroying them, but with how little success such endeavours have been and are likely to be attended I shall in some measure make appear"; and his friend Locke (who was an

accomplished physician as well as a great philosopher) follows in the same strain: "All that anatomy can do is to show us the gross and sensible parts of the body or the vapid and dead juices, all which after the most diligent search will be no more able to direct a physician how to cure a disease than how to make a man." Had he lived in the present century Sydenham would probably have taken a different view of morbid anatomy. Probably his example had something to do with the neglect of anatomy by English physicians in the eighteenth century when his influence was supreme. And even in spite of the triumphs of morbid anatomy in the present century there has been a certain undercurrent of disparagement or neglect which has not ceased even in our own time. The term "morbid anatomy" should not be used as restricted to post-mortem examinations, but as including the investigation of the material changes of tissues and organs by whatever means this investigation can best be carried out. The morbid anatomy of the ovaries has been chiefly elucidated by specimens removed during life, and the same is true of the pathology of the vermiform process and of tumours. It is a mistake to call all that is observed during life clinical and only that which is observed after death pathological. Physical diagnosis, including not only auscultation, but also the simpler investigation of abdominal organs, is really a study of morbid anatomy. Auscultation was introduced by Laennec, a profound pathological anatomist, who first showed how the facts of morbid anatomy, known by post-mortem examination, could be detected and studied in the chest of a living patient. It was only when physical signs were found systematically connected with known changes in the internal organs that they became significant. It is not too much to say that in diseases of the internal organs, other things being equal, the most precise diagnosis will be that of the physician who can form to himself the most precise mental picture of the state of a diseased organ and who knows also how to infer the existence of that state by observations during life of men like Sir William Jenner, Sir Samuel Wilks, Dr. Bristowe, and Dr. Murchison. It is claimed that while there are other methods of investigation, morbid anatomy supplies the most solid and fundamental facts, and that without it modern clinical medicine could not exist. In addition to its value in medical practice, morbid anatomy has played a great part in the advance of the scientific side of medicine, as shown conspicuously in recent years by the triumphs of bacteriology. The bacteriologist when making cultures is a botanist, when he detects bacilli in the tissues of man or animals is a morbid anatomist, and when studying the production of immunity in living animals is a clinical investigator, but he can seldom dispense with pathological anatomy and histology. Dr. Payne expressed the hope that the society would continue in its present course of bringing the results of pathological research into relation with practical medicine, and stating them in such a manner as to be intelligible to all who take an interest in pathology, even if they are unable to take part in original research.

Dr. G. F. STILL exhibited slides and cultures illustrating the bacteriology of the Posterior Basic Meningitis of Infants. He said that the disease occurred chiefly in the first year of life, and had been recognised recently as a definite disease both clinically and as regards its morbid anatomy, which is quite distinct from ordinary suppurative cerebro-spinal meningitis of pneumococcal infection or the septic meningitis from nose or ear disease. The cases are sporadic and occur most frequently in the spring. Seven consecutive cases were examined bacteriologically after death, and in all except one, which died three and a half months after the onset, the same organism was found. Subsequently a pure growth of the organism was obtained from each lateral ventricle in a child who had been ill over three months. In five out of the six cases it was obtained as a pure growth. The organism is a diplococcus, smaller than the pneumococcus, occasionally found in the cells, but more frequently floating in masses in the fluid. No definite capsule has been demonstrated. It stains easily by ordinary methods, but is decolourised by Gram's process. It is aerobic, and grows well at 37° C., but not at the ordinary temperature of the room. Rapid growth occurs on glycerine agar and agar-agar, which are the most convenient media, giving rise to slightly raised, greyish-white colonies, which are viscid and tend to run together to form rose-shaped patches. The growth is much thicker and more opaque, and the colonies are larger than those of the pneumococcus grown under similar conditions, and it also differs in not causing coagulation of milk. The organism grows well in broth, but very slightly on blood serum. It exhibits unusual vitality, living from thirty to forty days. It is seldom present in large numbers, and is easily overlooked unless a large piece of lymph is spread on the medium. Even when no cultures could be obtained from the adhesions at the base Dr. Still had found the diplococcus present in the fluid in the lateral ventricles. He had never succeeded in demonstrating it in the blood during life. Eleven inoculations had been made on mice, rabbits, and guinea-pigs. Subcutaneous injections produced no effect, and after intra-peritoneal injection the guinea-pigs merely refused their food, but none of them died. Dr. Still thought that the organism was certainly not the pneumococcus, but that it closely resembled the diplococcus intracellularis which had been described by Weichselbaum in connexion with epidemic cerebro-spinal meningitis. It differs in its strong vitality, in its growth in broth, and in its being non-toxic to mice and guinea-pigs. But Dr. Still held that these differences might easily be explained by a natural variation such as has been artificially produced in other micro-organisms, and that if this view is correct these cases must be regarded as sporadic cases of the same disease as epidemic cerebro-spinal meningitis.

Mr. C. SPURRELL showed specimens of Multiple Spontaneous Fractures taken from a married woman, thirty-seven years of age. She was of a neurotic temperament and, giving a long history of an indefinite illness, was admitted to the Poplar and Stepney Sick Asylum for spontaneous fracture of the right femur on March 6th, 1896. There was softening and deformity of the skeleton and the pelvis was especially distorted. She died from cystitis and septic nephritis on July 14th, 1897, and then had three fractures of the left femur, one of the right femur, fifth metatarsal, right and left tibia and fibula, right radius and ulna and six ribs on the left side. At the necropsy the femur was almost wanting in places, and all the bones could be easily cut with a knife. The medullary cavity of the bones of the upper extremities was diminished in size. Microscopically the bone appeared to be absorbed by giant cells and its place taken by hyaline cartilage and fibrous tissue.

Mr. EDGAR WILLETT showed specimens from a case of Multiple Spontaneous Fractures, the history of which has already been recorded by Mr. Langton,[1] from a man who was thirty years of age at the time of his death. He had had a succession of fractures from the time he was eleven years of age, in some of which bony union and in others fibrous union only occurred. When he was twenty-eight years of age a spindle-celled sarcoma developed at the seats of the fractures in his right humerus and the limb was amputated, but he died some months later from secondary deposits. The specimens showed fractures united by fibrous tissue and much displacement. There was no evidence of growth in any of the fractures except those in the right humerus.—Mr. J. R. LUNN remarked on the absence of nervous symptoms in the case related by Mr. Spurrell. The case bore some resemblance to one which he had described in the St. Thomas's Hospital Reports as acute osteitis deformans. The condition was very difficult to distinguish from osteomalacia.—Mr. D'ARCY POWER asked if the sarcoma was considered to be an accidental complication in Mr. Willett's case. He quoted the case of a boy who had a spontaneous fracture at the age of eight years, and afterwards had a succession of such fractures. He was still alive, and no light had been thrown on the pathology of the condition.

The following card specimens were exhibited:—

Dr. CALVERT and Mr. T. STRANGEWAYS PIGG: Melanotic Sarcomata in Various Organs.

Mr. D'ARCY POWER: Empyema of the Antrum in a Child aged eight weeks.

Dr. VOELCKER: (1) Carcinomata of the Heart and of the Pylorus; (2) Ulcerative Colitis; and (3) Uterus Bicornis.

BRITISH GYNÆCOLOGICAL SOCIETY.

Exhibition of Specimens.—Dysmenorrhœa.

A MEETING of this society was held on Oct. 14th, the President, Mr. MAYO ROBSON, being in the chair.

Dr. MACNAUGHTON-JONES showed a Uterus, the seat of both Carcinoma and Fibroid, removed by vaginal hysterectomy. The patient, a multipara aged fifty-three, had had no

[1] Transactions of the Clinical Society, vol. xxix.

symptom except hæmorrhage. Microscopic examination demonstrated the malignant character of the growth. While the operation was in progress the fibroid of the fundus offered considerable difficulties, being left behind owing to the tearing away of the friable lower portion of the uterus. He delivered the fibroid after compressing it with Doyen's forceps.—Mr. TENISON COLLINS (Cardiff) showed (1) a Foreign Body removed from the Bladder, consisting of a Pencil-holder round which a Stone had formed, and which had been *in situ* for two and a half years without causing symptoms and was discovered accidentally while dilating the cervix for stenosis; and (2) two Uteri removed by vaginal hysterectomy for Carcinoma.—Dr. CLEMENT GODSON showed a Glass Button-hole Flower-holder which he had recently removed from a Bladder. It had caused retention of urine. The patient came of a neurotic family.—The PRESIDENT, Dr. PURCELL, and Mr. BOWREMAN JESSETT, Mr. SKENE KEITH, and Mr. O'CALLAGHAN, joined in the discussion on the specimens.

Mr. SKENE KEITH read a paper on Dysmenorrhœa, which was limited to the treatment of uterine dysmenorrhœa. It was pointed out that the pain was caused, not by a stricture, but by the bending of the uterus *plus* the thickening of the mucous membrane and the congestion naturally present at the commencement of menstruation. The necessity of thoroughly trying general treatment before even thinking of anything local was insisted on, and the general treatment recommended was chiefly with the view of keeping the patient warm and thus preventing internal congestion. For the severe cases where all remedial measures had failed local treatment by stem pessaries, dilating in its various forms, division of the cervix, division with stitching, Dudley's operation, and Apostoli's treatment were considered; special attention being directed to the two last as being newer and less known than the others.—The PRESIDENT had had a very satisfactory experience of Dudley's operation, with which he had become acquainted through Dr. George Keith's paper before the society. It was simple and effective. He related a case illustrating its advantage over other procedures, and stated that he had not yet had a failure. He employed chromicized catgut sutures which did not require removal.—Dr. W. TRAVERS had had experience of the operation in four cases; he also had learned it from Dr. George Keith and indeed generally thought of it as "Keith's operation." One case, a neurotic woman and hitherto sterile, had been almost bedridden for seven years. After operation the first two periods were painless; at the third there was some return of pain; after this she got quite well and became pregnant.—Dr. HEYWOOD SMITH thought that a combination of incision, dilatation, and the use of the stem-pessary often answered very well. Dilatation alone did not usually lead to permanent improvement. The mistake was often made of incising too freely; the mucous membrane should be incised, just nicking the subjacent parts, and the dilators should then be introduced, after which a sterilised glass stem-pessary might be left in for a few days.—Mr. TENISON COLLINS said that when Dr. George Keith read his paper he was much worried over a case in which he had already dilated twice without avail. Dudley's operation led to complete cure. In two other cases the result had been equally satisfactory, and one of the two patients had since become pregnant and was delivered of a living child at term.—Dr. ARTHUR GILES acknowledged his indebtedness also to Dr. George Keith for his knowledge of Dudley's operation, which he had performed in about a dozen cases. In nearly all the result had been most satisfactory. In one or two there had not been much improvement, probably either because constitutional disorders had become established which took some time to subside or because the dysmenorrhœa was partly of central nervous origin. In one case all kinds of treatment for dysmenorrhœa had been tried for many years; the patient had been married twelve years and was thought to be sterile. After the operation the first two periods were absolutely free from pain, and she then became pregnant. He agreed with Mr. Skene Keith as to the importance of preventive hygiene in the early years of puberty. He thought that they needed here the coöperation of mothers, who should be impressed with the idea that dysmenorrhœa was no necessary portion of a girl's early menstrual years.—Dr. SCHACHT thought it would be very useful if at some future time all who had had experience of this operation would tabulate their results and send them in. He would willingly analyse and summarise such records for publication in the journal.—Mr. BOWREMAN JESSETT called attention to the fact that many young girls of from fifteen to seventeen years of age suffered from dysmenorrhœa, from which they were relieved by medical means, and great care should be used in selecting cases. It would be a great pity if the impression was created that the society advocated this or any other operation for all such cases. In cases of pure stenosis it was not indicated, but the plan suggested by Dr. Heywood Smith would probably answer quite well.—The discussion was then adjourned to the following meeting.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

Election of Officers.—The Purvis Oration.

THE first meeting of the forty-second session of this society was held on Oct. 8th at the Royal Kent Dispensary.

The annual report having been adopted, the following were elected officers for the ensuing year:—President: Mr. W. Arbuthnot Lane. Vice-Presidents: Dr. Morgan Dockrell and Dr. Edward H. Ezard. Council: Dr. R. Scholefield, Dr. George Herschell, Dr. John Mackern, Dr. Thomas C. Meggison, Mr. C. J. Parke, Dr. P. C. Scott, and Dr. Septimus Sunderland. Treasurer: Mr. J. P. Purvis. Secretary: Dr. J. P. Henry. Librarian: Dr. H. Bowen Williams.

Dr. G. H. SAVAGE then delivered the Purvis Oration. Having pointed out the immense progress which had resulted from the recognition of the facts of evolution he proceeded to consider the mental disorders associated with evolution and dissolution. The so-called ethnic division of idiots was suggested by the late Dr. Langdon Down. Some European idiots resemble Malays, Tartars, Mongols or Negroes. These cases happen to be human sports and not in any way to indicate that Europeans are the pinnacles of all civilisation. The Chinese may be able to return the compliment and say that certain Chinese idiots resemble Europeans. In idiot asylums one can meet with defects ranging from the slighter moral, intellectual or sensory defects to complete absence of all but the organic nerve reflexes. A few children come into the world simply reflex machines and not always good at reflex acts. Some seem without hunger or the desire for food and are quite unable to feed themselves or seek for food. Other children seem never to develop beyond the eating stage. Such seem to be morally defective from the first and may become adroit thieves. The young animal whose centre is his stomach is essentially egotistical. The deficient development of any altruistic feeling arises from defective development of the reproductive function. In another set of cases there is not complete arrest of development, but there is retardation of evolution. Some of these seem to be developed on one side at the cost of the others; they may be mechanical inventors or distinguished athletes, while reading, writing, and spelling may be almost impossibilities. There are moral idiots and moral imbeciles—children to whom truth, honesty, and any regard for others cannot be taught. Some such are brilliant musicians or infant prodigies of one kind or another. It is at the adolescent period that the neuroses, truly so-called, are most evident, such as hysteria and hypochondriasis, which almost always has a sexual basis. The patient thinks he has ruined his health by self-indulgence, or exaggerates some personal peculiarity. If so much fuss were not made about masturbation we should see fewer disastrous effects. The most delicate, most sensitive, and most conscientious are those most likely to indulge to their own injury. More harm follows the moral than the physical trouble. In some cases the worry rather than the physical effect leads to melancholia which is often suicidal. In general paralysis of the insane the reduction of mental power proceeds from the last and most specialised acquirement to the less developed, and in the end may leave little beyond a reflex machine. The inability to judge of one's own condition is very striking. As few old men recognise their failing powers till they are gone so the general paralytic is quite unable to recognise his state. Dissolution is the complement of evolution and is equally instructive. The mind gives way in different ways according to its physical environment, more rapidly in the city than in the country. Some nervous systems are calculated to work for a certain time and then break down. Neurotic heredity in many cases

shows itself in this tendency to break down prematurely. Dissolution is the reverse process to evolution and it follows the same lines in the reverse order, the most highly specialised functions failing first. In many cases the memory of recent events is lost while that of long past events is made clearer. With early signs of dissolution hysteria and sexual desire long absent seem to flicker up and often lead to trouble. In some cases there are marked sensory disorder and hallucinations of sight or hearing, and a tendency to dwell on supposed defects of the sexual organs. Co-related to this is the strange reversion which is often met with, so that the tastes, habits, and ways of youth reappear with age. In both evolution and dissolution we meet with disorders due to want of power and others depending on loss of control. King Lear and Don Quixote represent the very poles of senile dissolution. The oration was illustrated by a number of cases representing the different types of disease described.—Dr. EZARD, Dr. TAYLOR, Dr. BOWEN WILLIAMS Dr. MEGGISON, and Mr. ROBERTS having spoken, votes of thanks to the orator and out going officers were passed.—Dr. SAVAGE and Mr. PURVIS replied.

Reviews and Notices of Books.

Die Geschwülste des Nervensystems: Eine Klinische Studie. Von Dr. LUDWIG BRUNS. Berlin: S. Krager. 1897. (*Tumours of the Nervous System: A Clinical Study.* By Dr. LUDWIG BRUNS. Berlin: S. Krager. Glasgow: F. Bauermeister. 1897.) Price 12*s.*

THERE is abundant scope for clinical and pathological investigation in the domain of new growths implicating the several parts of the nervous system. Indeed, it is not too much to say that our knowledge of cerebro-spinal functions has been considerably amplified by such studies, whilst conversely the more exact determination of the localisation of these functions has aided materially in the diagnosis of the position of tumours and their amenability to radical removal. Varying much in their nature and rate of growth, tumours which involve brain or spinal cord present also great differences in situation, and therefore produce manifestations in associated signs and symptoms that demand close study for their differentiation. The records of cases illustrating every variety of new growths are sufficiently extensive to afford material for a most interesting and instructive monograph, which by collating and systematising the facts they describe cannot fail to be of service to neurological science and practice. This task has been well fulfilled by Dr. Ludwig Bruns, of Hanover, who has succeeded in presenting a survey of the subject that is sure to be appreciated. His subject matter falls naturally under the three heads of (1) Tumours of the Brain; (2) Tumours of the Spinal Cord; and (3) Tumours of the Nerves, each department being dealt with first from the anatomical and then from the clinical standpoint.

The thoroughness with which Dr. Bruns discusses the subject may be shown by a brief survey of the chapters devoted to cerebral tumours. In the first place he devotes many pages to the description of the various forms of tumour, pointing out the characteristics of gliomata and sarcomata, which he shows to be by far the most frequent forms, and also describing in detail gummata and tuberculous growths, as well as the less frequent examples, such as psammoma and cholesteatoma. Nor does he omit mention of cysticerci and echinococci, simple cysts, and aneurysms. The interesting question of the relationship of traumatism to cerebral tumours is debated with impartiality, inclining rather to the conclusion, even in cases where no symptoms arose until after the infliction of the injury, that this latter acted rather to reveal the presence of a growth (mostly gliomatous) which had been latent prior to that occurrence. At the same time he cannot doubt the occasional direct relationship and perhaps the more frequent excitation to increased activity of the new growth by the agency of traumatism. He does not think, as some do, that a hæmatoma can be converted into sarcomatous or other organised formation. The effects of a tumour upon the brain substance, whether by compression or infiltration, or the supervention of inflammatory changes, of softening and of hæmorrhage, are next described, and the all-important subject of symptomatology is entered upon. This is discussed in a thoroughly scientific as well as exhaustive manner. The general symptoms of cerebral tumour are held to be definite and characteristic. They comprise, in the first place, headache, the most frequent and the most important of all, the character and site of which are by no means indicative of the seat of disease (unless an occipital headache be accompanied by retraction of the head), and attributable to irritation of the nerves supplying the dura mater owing to the increased tension of the membrane; vertigo, a symptom of less frequency than headache, but of value when it occurs; vomiting, fairly constant, and generally sequential to headache; slowness of pulse, slow and irregular respiration, mental disturbance, chiefly dulness and hebetude. Convulsions, especially those of Jacksonian type, and optic papillitis are also fully described. Dr. Bruns is decidedly of opinion that the last-named characteristic is not of inflammatory origin, and that the old term of "choked disc" (Stauungs-papilla) is really a more accurate description of its nature. He gives various reasons for thus reverting to a doctrine that has been discarded by many high authorities, and some of them have certainly the merit of cogency. One of these is the fact, established by the recent successful ablation of brain-tumours, that the removal of the growth, or even the operation of trephining, which reduces the intracranial pressure, has been followed by a subsidence of the so-called "optic neuritis." The next portion of this chapter deals with local symptoms, and the effects of tumours in each part of the brain in turn are described. It is obviously impossible here to follow him through all these descriptions, the study of which proves how precise has become the means for localising lesions in this organ. It is pointed out that tumours in the frontal region produce ataxic symptoms similar to those due to cerebellar growths, and a valuable tabular comparison is given of the associated symptoms which enable the differential diagnosis to be clearly established. This question of diagnosis is also very fully treated subsequently, both from the point of view of the general signs of tumour as distinguished from those of abscess, meningitis, sclerosis, hysteria, &c., and from that of the locality and nature of the growth. Lastly, the subject of treatment is amply discussed, a full review being given of the experiences of surgical intervention.

The tumours which may involve the spinal cord are as various in their nature as those liable to affect the brain, but the effects they produce are less numerous, and their differentiation in consequence more simple. Yet the importance of their study is also great, since an exact determination of their situation and a satisfactory proof of their extra-medullary nature may enable them to be removed by operation. Intra-medullary growths, associated as these often are with syringomyelia, have a symptomatology of their own, of which the most prominent features are the bilateral distribution of muscular atrophy and paralysis, the dissociation of tactile, thermal, and algesic sensory defects, and the occurrence of cutaneous and other trophic disorders or of vaso-motor derangements. Such growths are of course beyond the sphere of ablation, but those which grow from membranes and are limited in extent may be readily removed. The tumours of peripheral nerves are more summarily treated; but the

section dealing with them gives many interesting facts upon neuromata of special nerve-trunks, besides those remarkable cases of multiple neuromata of which molluscum fibrosum forms the most striking example. The monograph is undoubtedly one which fills a place in medical literature hardly perhaps so fully occupied before. It abounds in facts of high interest and importance and has been prepared with manifest care as well as good judgment.

Saint Bartholomew's Hospital Reports. Edited by SAMUEL WEST, M.D. Oxon., and W. J. WALSHAM, F.R.C.S. Eng. Vol. XXXII. London: Smith, Elder, and Co. 1897. Pp. xlix. and 548. Price to subscribers, 6*s.*; to non-subscribers, 8*s.* 6*d.*

THE first place in this volume is given to a sympathetic "In Memoriam" notice of Sir George Murray Humphry by Mr. C. B. Lockwood, and this is followed by a similar appreciation of Mr. Morrant Baker by Mr. Alfred Willett. Mr. Thomas J. Horder contributes a collection of 258 Aphorisms enunciated by Dr. Gee during the years 1895 and 1896; they vary of course greatly in interest, but many of them are of distinct value and well deserve to be rescued from oblivion. It would be of interest if similar collections were made from the utterances of other physicians.

Every surgeon must have experienced the difficulty of diagnosing between true intestinal obstruction and some forms of colic, and Dr. A. M. Mitchell gives notes of four cases of enteritis and colic in which the resemblance of the symptoms present to those of intestinal obstruction was so great that in three out of the four cases a laparotomy was performed, but no obstruction of the bowel was found; a useful table of the chief points in the four cases is added for comparison. Mr. Edgar Willett has a short paper on the Roseolous Rash which appears in some cases during the administration of ether; it shows itself about four minutes after the commencement of the administration and lasts for about ten minutes. It is more common in women than in men, and occurs in about 5 per cent. of all cases. Mr. McAdam Eccles contributes a paper on Hernia of the Vermiform Appendix; he has collected twenty-nine cases of this condition; in sixteen of these the appendix was alone in the hernial sac and was acutely strangulated, in seven cases it was alone in the sac but was inflamed, in four cases it was alone in the sac and unaffected, and in two cases it was in the sac with other viscera, and acute inflammation of the appendix existed. It is probable that the presence of the vermiform appendix in the sac of a hernia is by no means rare. Dr. F. W. Andrewes has written a valuable paper on the occurrence of the Diphtheria Bacillus in a series of cases of sore-throat amongst the female staff of the hospital. He examined systematically every case of sore-throat of whatever type which presented itself to him in his capacity of medical attendant to the nursing staff. The conclusions at which he arrives are as follows: the clinical characters are sufficient for the purpose of diagnosis of diphtheria in a large proportion of the cases, but in some cases, perhaps a ninth of the whole number, bacteriological examination proves the presence of the diphtheria bacillus although the clinical aspect of the case is not that of diphtheria. Dr. Andrewes considers that absence of virulence in a bacillus is no indication that it is not a true diphtheria bacillus, and that the spread of diphtheria is chiefly due to those slight unrecognised cases which clinically would not be considered to be cases of the disease. In one case the cultures of the bacillus when first isolated from the throat were non-virulent, but after some months of cultivation they became highly virulent. This case is in itself sufficient to show that virulence is quite untrustworthy as a criterion. Space will not permit of detailed references to all the papers contained in the volume, but we may mention a useful paper on Thiersch Grafting, by Dr. H. J. Paterson; an elaborate article on the Leucocytosis of Scarlet Fever, by Dr. R. Sevestre; and a valuable paper, by Mr. H. Holmes and Dr. A. A. Kanthack, on the Relationship of Cardiac Hypertrophy and Œdema to Chronic Renal Disease.

Dr. Morley Fletcher's paper on the Etiology of Chorea is also interesting. He concludes from the consideration of the records of 307 in-patients and 273 out-patients suffering from the disease that chorea is a manifestation of rheumatic fever, but that many other causes may coöperate in the production of the disease. Dr. Arthur Heath records four cases of Congenital Absence of the Radius in one family. Dr. H. H. Tooth has contributed the results of his investigations into the Pathology of Alcoholic Neuritis, and arrives at the conclusions that in some cases, though symptoms of alcoholic paraplegia have been present for a considerable period, yet post mortem no alteration of the nerve fibres can be found, that the change in the nerves when it does occur is always degenerative in character and never inflammatory, and that marked pigmentation of the cells of the anterior cornua is a common feature. The article is accompanied by a very copious bibliography of the subject. Descriptions of the specimens added to the museum during the year ending September, 1896, and statistical tables of the patients under treatment during 1895 by the medical registrar (Dr. W. P. Herringham) and the surgical registrar (Mr. James Berry) conclude the volume. These tables are very elaborate and must represent a vast amount of labour expended in their compilation. Details of a large proportion of the surgical cases are also given and add much to the value of the surgical registrar's report. An interesting table is that of the amputations with the percentage of deaths during the ten years 1836 to 1895 inclusive.

It is often said that hospital reports are of little value, but a volume like the one before us completely disproves any such statement.

Health in Africa: A Medical Handbook for European Travellers and Residents, embracing a Study of Malarial Fever as it is Found in British Central Africa. By D. KERR CROSS, M.B., C.M., F.R.G.S., Medical Officer for British Central Africa Protectorate. With an Introduction by Sir HARRY JOHNSTON, K.C.B., H.B.M.'s Commissioner for British Central Africa Protectorate. With numerous Illustrations. London: James Nisbet and Co., Ltd. 1897. Price 3*s.* 6*d.*

THE author of this laudable attempt to be of service to those who live in Africa on the outskirts of civilisation tells us in his preface that ten years' residence in British Central Africa as a medical man has impressed him with the need of a small handbook on health. He points out several reasons why this should be so, both in reference to the personal health and well-being of the new-comer to malarial regions and in reference to others, as, for example, the natives of Africa, by whom any European is regarded as a medical man to whom they frequently appeal for advice and medical aid when sick. In a volume like the present, embracing so many and such variety of subjects, which are treated in a necessarily condensed but plain and useful fashion, it is difficult to select passages illustrative of the way in which its author has fulfilled his task. A work of this kind is, and must be, in great part a compilation, but no pains seem to have been spared to render the information useful and trustworthy and up to date. It is very far from being, however, a simple compilation or sample of bookmaking, for the information is conveyed in an intelligent, scientific spirit. That part of the chapter on Specific Fevers which treats of malarial fever strikes us as good. Malarial diseases, although very unequally distributed over the globe, are the most ubiquitous of all diseases; they recede as

civilisation advances; and drainage, cultivation of the soil, and the rendering of the surface of it more or less hard and impervious, have nearly abolished them in Europe. In climates like those of Africa it is far otherwise, and this will, it is to be feared, long remain so. The account of these fevers—their different forms and varieties, symptomatology, clinical features, treatment, and causation—is well done, and a lucid and interesting, if condensed, explanation of the life-history of the micro-organism with which they are associated—the plasmodium malariæ—is given. Black-water fever, or bilious hæmoglobinuria, is also shortly but well described. We notice, by the way, a typographical error at page 50, in which "retention" is used for "retraction" of the testes. The book contains a large amount of very useful and practical information on a variety of topics; it is very well illustrated and has a good index, and it may be honestly recommended as an excellent guide to those for whom it is designed.

LIBRARY TABLE.

A First Series of Fifty-four Consecutive Ovariotomies, with Fifty-three Recoveries. By A. C. BUTLER-SMYTHE, F.R.C.S. Edin., F.R.C.P. Edin., Senior Surgeon to the Grosvenor Hospital for Women and Children, Senior Surgeon to Out-patients, Samaritan Free Hospital for Women and Children. London: J. & A. Churchill. 1897. Price 6*s.* 6*d.*—The author says in the preface: "When I had completed my first fifty cases I decided to wait and see if I could obtain a clear run of fifty successful operations, inasmuch as I had been unfortunate enough to lose my fourth patient. Having now succeeded in attaining my object I venture to publish the results." There is always a little difficulty in classifying cases that have to be published under the title of "Ovariotomy." The term is here defined as meaning "removal of solid tumours of the ovary, cystomata, broad ligament tumours, parovarian, tubo-ovarian cysts, and cystic ovaries." There are a few general remarks on the operation, and on the significance of certain symptoms, at the beginning of the book. The author believes in flushing out the peritoneum in certain cases—for instance, where pus has been met with during the operation. Many operators, however, believe that such flushing tends rather to diffuse offensive matters to distant parts of the peritoneum previously unsoiled, and rely entirely on sponging to remove the pus. As regards drainage, another point as to which there is a good deal of difference of opinion, the author evidently believes it to be frequently required, as it was employed in twenty-five out of his fifty-four cases. We do not agree with the author in his views about the pulse in patients after ovariotomy. He considers that "too much importance is attached to rapidity of the pulse." ..... "In the absence of further indications, a rapid pulse should not be looked upon as denoting danger." Certainly a rapid pulse is generally of less importance during the first two days after ovariotomy than it is a day or two later. No doubt also the size of the pulse must be considered when estimating the importance of its rapidity. But, with these qualifications, we think most operators agree that the state of the pulse is by far the most important guide as to the condition of the patient after ovariotomy and similar operations. Mr. Butler-Smythe adopts a somewhat picturesque style in describing his cases, which reminds us of Mr. Charles Wyndham recounting the numerous objects of his admiration in *The Case of Rebellious Susan*. Thus "Mrs. M., a short woman; ..... M. W., a tall woman; ..... E. C., a thin woman; ..... E. W., a medium-sized woman; ..... J. R., a dark-haired woman; ..... A. B., a brown-haired woman; ..... M. P., a stout woman with iron-grey hair; ..... A. E., a putty-faced woman; ..... E. R, a pasty-faced woman; ..... (these last three were not included if we remember rightly in Mr. Wyndham's series); M. T., a fair-haired woman; ..... L. C., a full-faced woman; ..... M. G., a merry-faced woman," &c. The last case given is E. H., a widow, whose appearance the author, no doubt for good reasons of his own, does not venture to describe. A faithful record of a series of operations is always interesting, especially to those engaged in similar work, and to this rule Mr. Butler-Smythe's little book is no exception.

Sight-testing for the G. P. By F. DAVIDSON. Pp. 36. London: A. La Riviere. Price 2*s.* 6*d.*—In this little book, the title of which is inelegant, the subject of glasses and of sight testing is given from an optician's point of view, and the statements made are sufficiently correct for all ordinary cases. They would probably enable the country practitioner, who has not had an opportunity of attending an ophthalmic hospital or the eye wards of a general hospital (if there be such), to determine a simple case of myopia, or hypermetropia, or of astigmatism. We doubt, however, whether it is quite within the province of an optician to pose as the instructor of medical men in these respects. The physiological factor is, of course, overlooked, and the patient who is suffering from spasm of the muscle of accommodation consequent on hypermetropia, might easily have concave glasses ordered for him to his detriment, as there is no caution given in regard to that condition. Again, the maxim here laid down, "Advise the invariable use of glasses for reading and all near work in myopia," must depend for its correct application on the degree of myopia. Many persons who are moderately myopic have got into the habit of holding the book at a certain distance, and are indisposed to wear glasses which make a change in their position requisite. Once more, it is stated that astigmatism is *always* corrected by means of cylindrical lenses; but, alas, there are cases of irregular astigmatism in which no form of cylindrical lens that can be ground will afford much help. Fortunately, however, these are rare.

Analytical Records
FROM
THE LANCET LABORATORY.

PICNIC CONDENSED MILK.

(THE CONDENSED MILK COMPANY OF HOLLAND, LIMITED, ROTTERDAM, AND 21, MINCING-LANE, E.C.)

PERHAPS the most satisfactory feature in the composition of this condensed milk is, as our analysis shows, the excellent proportion of fat or cream-equivalent which it contains. The fat amounted to 12·00 per cent. and the mineral matters to 1·80 per cent. On diluting the milk with 3½ parts of water the resulting milk presented the composition of genuine rich milk, containing nearly 4 per cent. of fat. For infant feeding it is directed to dilute the milk seven times, in which case a milk of the following composition is obtained: Total solids (including cane sugar), 15·83 per cent.; fat, 1·90 per cent.; mineral matters, 0·30 per cent. The sample was in a sound and excellent condition and free from preservatives other than cane sugar. It is not in any degree deficient in the nourishing constituents of rich cow's milk.

ANTI-DIABETIC BREAD (FOUGERON).

(MESSRS. FOUGERON AND CO., 30, RUE ST. AUGUSTIN, PARIS. LONDON AGENCY: R. HOWDEN, 28, GRACECHURCH-STREET, E.C.)

On examination this bread proved to be somewhat heavily loaded with fatty matter, while on boiling a portion in hot water the resulting liquid when cooled gave a strong starch

reaction with iodine. The basis of the bread is evidently almond flour. We are not sure whether the bread is offered as a remedy for the disease or as simply a suitable food for the diabetic. In a pamphlet accompanying the sample submitted to us it is said that the use of this bread decreases the glycosuria "in large proportions," and "in the case of diabetics where the urine has a small trace of sugar it causes it to disappear." We ask, Why? The bread contains a distinct quantity of starch and has a not very agreeable oily taste.

ST. RAPHAEL QUINQUINA WINES.

(E. DELACOSTE, 16, NEWMAN-STREET, OXFORD-STREET, W.)

A red wine and a white wine were submitted to us for examination. The results of analysis were as follows. Red wine: Alcohol, by weight 15·33 per cent., by volume 18·88 per cent., equal to proof spirit 33·08 per cent.; extractives, 7·36 per cent.; mineral matter, 0·30 per cent. White wine: Alcohol, by weight 15·67 per cent., by volume 19·28 per cent., equal to proof spirit 33·79 per cent.; extractives, 13·82 per cent.; mineral matter, 0·30 per cent. Neither of the wines yielded quinine on extraction with a suitable solvent, but a residue was obtained, which was bitter to the taste and somewhat pungent. This residue with potassium tri-iodide gave a reddish-brown precipitate, a reaction which is characteristic of the cinchona alkaloids. The solution of the residue, however, in sulphuric acid did not exhibit fluorescence. Both samples had "crusted" to a small extent at the time they were received. The wine selected as a basis in each case was of excellent quality and of generous character, possessing good, fruity, and slightly aromatic flavour.

MARVINE GELOIDS.

(THE MARVINE SYNDICATE, LIMITED, 23, ELDON-STREET, AND BROAD-STREET HOUSE, E.C.)

Complete confirmatory evidence was obtained of the statements made in regard to the composition of these "geloids," or lozenges, as they really are. They possess a pleasant acid flavour and dissolve readily in the mouth, a distinct but pleasant taste of beef extractives and cocoa at the same time being noticeable. The mineral matter obtained on incinerating a "geloid" contained a large proportion of potassium phosphate. Apart from the presence of the other ingredients this soluble salt, as is well known, affords a very refreshing beverage when dissolved in water. Marvine geloids act well as "thirst quenchers," due chiefly to the presence of the acid of lime juice. In addition, they contain well-known nourishing and stimulating ingredients. They keep well, but contain no objectionable preservatives.

LE VIN DÈSILES.

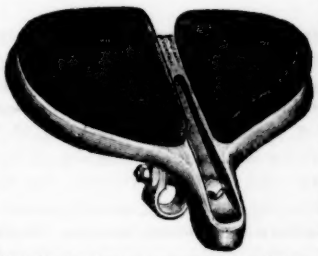
(AGENCY: FASSETT AND JOHNSON, 32, 33, SNOW-HILL, E.C.)

We cannot recognise that this wine is, as stated, a remedy for anything like the great number of complaints enumerated in a pamphlet which accompanied the sample submitted for examination. It doubtless serves as an agreeable restorative and tonic, since it contains the extracts of coca, kola, and cocoa, together with iodo-tannin and phosphate of lime. The excipient is "Special Dèsiles." We had little difficulty in confirming experimentally the presence of the many and various constituents indicated. The composition of the wine was as follows: Absolute alcohol 16·23 per cent., by volume 19·96 per cent., equal to proof spirit 34·98 per cent.; extractives 23·45 per cent.; mineral matters 0·26 per cent. The wine is sweet to the taste and has a strong flavour of coca leaf. It is described as a "Cordial Régénérateur." Its composition is certainly complex, and this is why, we suppose, it is recommended for so many ailments—a recommendation to which we refuse to lend the slightest support.

New Inventions.

THE "CHRISTY" ANATOMICAL BICYCLE SADDLE.

IT is generally conceded that the most important item in a bicycle is the saddle, for upon this depends the comfort of the rider, and it determines in large measure the question whether or not cycling is a healthful or a harmful exercise. The saddle under consideration is built so as to avoid any perineal pressure. As will be seen by the illustration it consists of two pads separated by a groove and the surface lies in a horizontal plane and is not wedge-shaped. The only difference between the saddle intended for a man and that for a woman consists in the peak being slightly shorter in the case of the latter. We have submitted each form of saddle to a competent rider of either sex and have received a favourable report thereon. At first there is a feeling of insecurity, but this very soon wears off after a little practice. The makers are Messrs. Spalding and Bros., 54, Holborn Viaduct, E.C.



THE INDIAN RISING AND THE TIRAH EXPEDITION.

THERE has been some sharp but desultory fighting on the border, on the Samana range, and two squadrons of the 9th Bengal Lancers reconnoitring from Fort Bana in the Khyber fell into an ambuscade and sustained a rather severe loss. The way has now been cleared, after the desperate fighting at Dargai on the 20th, for the advance of the main column of the force for Tirah, and the arrangements for the expedition under Sir William Lockhart have been completed. If we may judge from the samples we have already had of the fighting the advance of the expedition will be stoutly opposed, and the next point to be carried where the tribes are likely to make a stand will be the Sanpagha Pass. Ambuscades and surprises and the extreme difficulty of getting at the enemy in mountain warfare of this kind are the main obstacles to be overcome. One great anxiety connected with the expedition has, as usual, been the transport. While every effort has been made to reduce the amount of baggage and material to the utmost, the number of transport animals accompanying the force is necessarily very large. There will be as little tentage as possible with the troops—that allowed for hospital purposes will be on a very reduced scale, and considering the physical features of the country and the nature of the expedition it cannot be otherwise. We have not yet seen any official list published of the medical *personnel* of the forces and we can only trust that the number of medical officers accompanying the troops will be fully adequate to their requirements. The expedition is on a large and bold scale and must prove a very costly one, but it had become inevitable. The tribes had no excuse whatever for their rising at the present time; they had been subjected to no unjust or aggressive treatment, and they were being paid for keeping the roads and passes open. The movements of the expeditionary force sent for their punishment will be followed with great interest. Nothing can exceed the pluck, loyalty, and devotion of the native army, and the troops—British and Indian—of the expedition are in excellent health and fettle. As the expedition had to be undertaken we trust it will not be regarded simply as a punitive one. The opportunity must be seized for reducing the Afridi and Orakzai tribes to order and for securing some settlement that shall secure the frontier from a repetition of treacherous revolts of this nature. The recalcitrant tribes must be taught that the Indian Government is master, and intends to remain so. Having learnt that lesson it will remain for a wise, judicious, and conciliatory policy to effect the rest.

THE LANCET.

LONDON: SATURDAY, OCTOBER 23, 1897.

THE theme of the notable address delivered by the Harveian Orator at the Royal College of Physicians of London on Monday last was happily chosen, whilst its spirit was consonant with the life-work of the master—our "venerated saint and apostle"—whom it commemorated. With admirable skill Sir WILLIAM ROBERTS showed how intimately bound up with modern civilisation are the methods of scientific inquiry which were practically initiated by HARVEY and his great contemporaries, GALILEO, BACON, and DESCARTES, and he felt justified in doubting whether it were possible for a civilisation so supported to share the fate of those ancient civilisations which have either become wholly extinguished or have remained stagnant and effete. For he pointed out that those ancient civilisations rested upon the cultivation of pursuits that are finite and personal, upon art and letters which seem to be incapable of advance beyond a certain pitch of excellence, and then to suffer decline. To be sure, they may be revived, and the world may yet witness another Renaissance, but they cannot in the nature of things undergo that expansion which in the sphere of science seems well-nigh illimitable. It was far from the orator's intention to institute any comparison between these mainsprings of human thought and endeavour; his admiration for the treasures that have been handed down by the masters of arts and literature proves that he did not disparage the part they had played in the cultivation of mankind; but he truthfully pointed out how some of the most precious masterpieces are those that were produced in dim antiquity, and how far below the heights then attained have fallen the endeavours of all but a few who have since laboured in the same fields.

Exact science—that based on the observation of facts, on experiment, on generalisation and deduction—dates from the time of HARVEY, and during the three centuries that have elapsed it has been undergoing an evolution which within our own time has proceeded with amazing rapidity to the great advantage and welfare of mankind. It may be that its progress will be less rapid in the future, but that it will continue to progress there can be little doubt. Sir WILLIAM ROBERTS, in the skilful exposition of some of the gains which have already accrued from the development of the sciences, expressed no doubts on this score. The spirit and methods of true science are such that when properly pursued they admit of no retrogression. Facts established as facts cannot be shaken; and one discovery of these secrets of Nature which HARVEY exhorted us to seek out leads to another being revealed from her inexhaustible store. Therefore, the Harveian orator has no fears for our modern civilisation, nor does he share the view expressed by the late Professor PEARSON as to its ultimate destiny. The nations that have pursued science can never be overwhelmed by the unscientific. Equally hopeful was his outlook of the effects of a civilisation based on science in promoting peace and improving culture, whilst the very storm and stress which are introduced into modern life by means of this activity are evidence of vigour and vitality as well as of progress.

Thus, then, did the Harveian orator convey a lesson which may well be taken to heart. It is not one indeed which is needed by members of the medical profession. They know too well the immense gains to health and prosperity which have arisen directly from the pursuit of natural science. But there are some persons in these days who seek to disparage science, and write or talk as if the world would have been the better without it. It is to be hoped that such people will embrace the opportunity afforded them by Sir WILLIAM ROBERTS of learning to how great an extent they are dependent on that which they affect to despise. He is no true lover of science who claims for it that which does not rightly belong to it, nor does it befit the follower of science to be arrogant and bigoted. Those who have best contributed to its advance have been men who have pursued it in the spirit of HARVEY, whose life and work have seldom been more happily and tersely sketched than they were in this oration. It is well to commemorate such a man, and it is well for us, too, to be reminded of the great work he did in laying down the first principles of scientific observation which have yielded so much up to the present and promise to yield yet more in the future.

WE dealt last week with the subject of adulteration of food, and drew a few lessons from the mass of interesting material supplied by the twenty-sixth annual report of the Local Government Board which has recently been issued. With the same report under consideration we may now turn our attention to the water-supply of the metropolis. Recent events have contributed largely in bringing the questions of the quality and quantity of the water supplied to London prominently before the public, and in their report Major-General SCOTT deals with quantity and Sir EDWARD FRANKLAND with quality.

In regard to the former section of the subject it is well known that during the last year or so considerable arrangements have been made for increased storage, and this is notably the case with the East London Waterworks Company, while the construction of storage reservoirs near Staines on a very large scale is about to be commenced under Parliamentary powers obtained by three of the metropolitan water companies during the last session of Parliament. The mean daily discharge of the Thames at Kingston is 1,300,000,000 gallons, and the quantity of water daily abstracted for the use of the metropolis is limited to a maximum of 130,000,000 gallons in twenty-four hours. The withdrawal of the quantity taken by the companies "can have no appreciable effect on the *régime* of the river in a general sense." But exceptional droughts in the summer must be taken into account, and it is at this time that the flow of the river is reduced to a minimum while the abstracted quantity approaches a maximum. Proper storage is the

only means of coping with this difficulty if the present sources of supply are to be counted upon as adequate for future requirements. This applies with still more force to the Lea, which may be reduced to a stagnating quantity and to a minimum fraught with risks to the public health. Major-General SCOTT rightly emphasises the necessity for enforcing strict conservancy and regulations for sewage farms situated on or near the rivers above the intakes, and for the rejection as far as possible of the water of the Thames and the Lea during periods of rain when the rivers are swollen by surface drainage. These precautions become more and more urgent every year as the population in the river districts increases. Consequently upon the experience of severe frosts during recent years several of the companies have relaid their mains at a greater depth, and considerable advances have been made in extending the system of constant supply. Cisterns, however, cannot be dispensed with; but, at the same time, there should always be a draw tap on the supply pipe so that water can be obtained for drinking and cooking purposes in a pure and cool condition direct from the main. We are surprised to find that in spite of the importance of a good "head" of water being maintained in the mains for the purposes of fire extinction the companies at present are under no statutory obligation.

Sir EDWARD FRANKLAND'S report on the quality of the metropolitan water-supply is full of interesting reading and its purport is decidedly reassuring. No unpalatable or objectionably tinted water was detected during the year. The unfiltered water of the Lea was generally superior in regard to organic matters to that of the Thames. Sir E. FRANKLAND refers to those researches which have shown that zymotic agents are rapidly destroyed in running water, so that the most minute microscopic inspection of the water as it reaches the intake has failed to discover in it a single pathogenic germ. Efficient sand filtration, it is pointed out, would further prevent the passage of such germs into the filtered water even should they arrive in a living condition at the intakes of the companies. Thus, he says, the hygienic objection to the use of filtered water taken from the Thames and Lea is removed. We are quite willing to accept this statement, but only so long as efficient filtration is held to be the highest possible degree of efficiency of which the filters are capable. The organic matter present in river water as delivered in London was according to the construction put upon Sir E. FRANKLAND'S analyses during the past year to a very large extent of vegetable origin. Both the Thames and Lea waters delivered during the year 1896 were somewhat below the average quality of the previous years in regard to organic matters. In regard to suspended matter Sir E. FRANKLAND adds a paragraph which we imagine would not have appeared had not the London County Council's chemists about this time last year published a report in which it was shown by DIBDIN'S micro-filter method that suspended matter identical in character with that occurring in raw Thames water was found in the water drawn from the London public supply. Sir E. FRANKLAND is very precise in demonstrating how all water, even the purest in nature, contains abundance of suspended matter. He adds that the amount of this suspended matter in the *efficiently* filtered river water supplied to the metropolis rarely if ever exceeds 0·0002 gr. in a tumblerful, and therefore in order to imbibe a single grain it would be necessary for the consumer to drink no less than 5000 tumblerfuls of the water. This is a popular way of putting it, which forcibly reminds us of the London County Council's Report in which the amount of suspended matter was calculated in terms of mud containing 90 per cent. moisture.

Sir E. FRANKLAND again evidently had Dr. KLEIN'S portion of the London County Council report just referred to in his mind when he pronounced upon the standard of bacteriological purity. He does not consider that the presence of the bacillus coli communis in water is a proof of sewage contamination, because this organism is one of the most ubiquitous and persistent of harmless microbes. We do not think this statement will go without challenge. We are again reminded of the London County Council report in Sir E. FRANKLAND'S expression of opinion that it is of little use to examine the filtered water delivered in London, not only because it is a mixture of the effluents from many filters, but especially because the multiplication of ordinary river and harmless microbes is so rapid that the number is generally increased many fold between the filtration works and the standpipes in London. He supports his argument by the results of experiments which showed that whilst the Lambeth companies' filters were passing water containing only 116 microbes per c.c. a sample drawn from one of their standpipes in the streets contained 1560 in the same volume. Further, as he has previously shown, the results of the bacterioscopic examination of the unfiltered waters again demonstrate the remarkable effect of storage in reducing the number of bacteria. In some instances he found a number of microbes in the water-supply in excess of the standard, and in June, for some unexplained reason, the filtration plants of nearly every metropolitan company were simultaneously unable to perform efficiently their work of bacterial purification. Sir E. FRANKLAND has failed to find an explanation of this singular occurrence. As he reasonably observes, if it had occurred only in one or two cases it might have been attributed to accident or carelessness, but the fact that it occurred in every supply indicates that the cause must be some condition or conditions affecting both the Lea and the Thames.

THE election of Mr. VICTOR HORSLEY, as we said last week, was secured by a substantial majority. He received 6946 votes against 6112 given for Sir WALTER FOSTER—a majority of 834. This result appears to be very satisfactory to the profession as a whole, for Mr. HORSLEY'S opponents recognise in him a man who will support the dignity of direct representation, while his friends have every confidence in his energy and his devotion to the cause of medical reform. If he expresses advanced opinions he will give grounds for them, and it cannot be supposed that one occupying his high position in science will advocate anything that will tend to any deterioration of the educational standards of the profession.

The general lessons of the election are not to be

disregarded. It is comparatively gratifying to gather from the report of the Registrar that 59·64 per cent. of the voters did their duty by voting for the candidate they preferred. Of 22,576 voting papers sent out—that is, by the way, just one less than the number issued last year—13,466, or 59·64 per cent., were returned by the voters within the proper time. This is an improvement in the numbers voting equal to 5·42 per cent. of the whole as compared with the election of last year. But it is not wholly satisfactory. It still leaves 8061 voters who have not availed themselves of the privilege conferred on them by the Act of 1886. Though larger than in 1896, the proportion of voters is less than in 1886, when it was 74 per cent. of the voters, and than in 1891, when it was 61·3 per cent. More than a third of the constituency have abstained from voting, which seems to show an indifference to the privilege or a great satisfaction with the "powers that be" in the profession. The fact must be pondered by those who are contemplating large additions to the number of Direct Representatives. They will be expected to explain why so large a proportion of the profession do not care enough for the principle to return a voting paper at the expense of a penny. Parliament does not care to concede votes to those who are not importunate in demanding them and faithful in the use of them when conferred.

A feature of this election was the practical concentration of the votes on two candidates. When the votes are scattered over ten candidates, as they were in the election of last year, the influence of the candidate returned is weakened. The rest of the Council may, if they choose, regard such a Direct Representative as the delegate of a section rather than as the choice of the profession. On this occasion there can be no doubt that Mr. HORSLEY and Sir WALTER FOSTER constituted between them the choice of the profession—or rather of those members of the profession who chose to exercise their prerogative of voting. The votes were practically divided between them, and as their public promises differed in no material way either can, if he likes, claim to represent the medico-political views of his opponent's supporters. In a second respect the recent election has been significant. Hitherto two principles have had considerable sway; firstly, that there should be a rough territorial representation as between the metropolis and the provinces, and secondly that the Direct Representatives should be general practitioners. These principles have been quite ignored. The member whose retirement created the vacancy was a provincial representative. An eminently able provincial physician offered himself for the vacancy, and he has been beaten by a London candidate who received very great provincial support. The other principle, that preference should be given to a general practitioner for a Direct Representative, seeing that the Council consists so predominantly of members of the consulting or teaching class, has been no less neglected. Concerning this point, we are still strongly of opinion that, other things being equal, the seats of direct representation should be filled by men in general practice. But other things must be somewhat equal, and it would have been difficult to find any general practitioner with Mr. HORSLEY'S knowledge of the reforms needed to make the general practitioner's life easier and his remuneration more secure. Certainly no one possessing similar practical experience presented himself on this occasion as a candidate for election. We shall watch Mr. HORSLEY'S career in the Council with the greatest interest. His first official action, as announced in his letter to the profession, which we publish in another column, is full of promise. With distinct self-sacrifice he pledges himself to retire from the Council in 1901, when the term of the other two Direct Representatives for England and Wales expires, thereby saving the profession from the inconvenience and the Council from the expense which would otherwise have been entailed by Dr. RENTOUL'S procedure.

Annotations.

"Ne quid nimis."

ABSENCE OF MEDICAL EVIDENCE AT INQUESTS.

WE have read the reports of two inquests recently held in Gloucester. Inquest number one was on the body of a man, unidentified, which was found in a pond. A police constable deposed to finding the body. He "got it out and removed it to the mortuary, but could find no marks of injury; ..... he believed it had been in the water eight or nine days." An open verdict was returned. Apparently there was no medical evidence called and no attempt to find the cause of death. Inquest number two was held on the body of a girl, aged nineteen years, which was found in the canal on Oct. 4th. The mother deposed to seeing her daughter for the last time on Sept. 29th; she was then perfectly well and cheerful. William Voyce spoke as to the recovery of the body and bringing it to the mortuary, and Emma Maisey said she made an examination, but found no marks whatever on the body or any sign of injury. The coroner said there was no sign of suicide or any evidence to show how the girl got into the water. If the jury were not satisfied he would adjourn the inquiry. The jury thought it unnecessary to adjourn the inquiry and an open verdict of found drowned in the canal was returned. Now we should very much like to know how this jury arrived at the conclusion that the girl was drowned. Is anyone found dead in the water necessarily drowned? The deceased might have been murdered and thrown into the water dead, or drugged and thrown into the water while still alive, or have fallen in accidentally, despite her hat and umbrella having been found on the bank; but what is the use of pursuing further hypotheses? Suffice it to say that if ever there was a case which called for a strict inquiry and medical evidence founded on a post-mortem examination this case is such an one.

SEWER VENTILATION AND TYPHOID FEVER.

A CORRESPONDENT at York sends us a newspaper cutting from which we gather that the question of sewer ventilation has been exercising the minds of the City Council. The city has spent upwards of £200,000 on its system of sewerage and has adopted, under competent advice, the plan of surface ventilators. These have proved less successful than could have been wished; the smells arising from them are stated to be abominable, and during a recent discussion at a meeting of the Streets and Buildings Committee the prevalence of typhoid fever in the city was by certain councillors openly ascribed to this source. Other members of the council, and amongst them a highly qualified medical man, maintained that the escape of sewer gases into the fresh air, though

possibly deleterious, was incapable of causing typhoid fever; and it is this statement which has excited our correspondent's ire. The question, as a matter of fact, is one of considerable difficulty. Cases are not wanting in which the escape of sewer air has apparently led to typhoid fever, as in the instance of Eastney barracks, where proper sewer ventilation put a stop to the frequent occurrence of the disease. On the other hand, we have not only the growing evidence that typhoid fever is in the main a water-borne disease, but the fact also that men employed in sewers and sewage works are not specially subject to it. Above all, we have good experimental evidence that sewage does not, under ordinary circumstances, give up the bacteria which it contains to the air in contact with it. The testimony on this point is almost unanimous. Miquel, Carnelly and Haldane, and Laws all find sewer air remarkably free from germs, and the last named, in an investigation carried out for the London County Council, proved that the species of micro-organisms present in the sewer air in London were related to those of the fresh air outside and not at all to those present in the sewage. Not once in numerous experiments did he find the bacillus coli communis in sewer air, though it was shown to teem in the sewage. Thus the balance of evidence goes to show that the conveyance of the typhoid fever germ by sewer air must at least be very exceptional, and we know of no proof that the disease ever arises as the result of the mere escape of sewer gases into the open air. That the inhalation of sewer air may produce injurious effects no one will dispute, but precisely how it does so is at present obscure. It is more than probable that its escape into houses may be a serious predisposing cause of typhoid fever, diphtheria, and other diseases, presumably by leading to general ill-health and thus to a lowering of the powers of resistance against infection borne by other channels. We have only recently pointed out in these columns that the distribution of typhoid fever in Maidstone may be in part explained by the action of such a predisposing cause as the ascent of sewer air into the houses in the higher regions of the town. But certainly the injury is at a minimum where the sewer gases escape into the open air. If the sewers of York give rise to offensive effluvia this may be either that the surface ventilators are not sufficiently numerous or that the sewers have not a fall adequate for their efficient flushing. The experience is pretty general that for large towns surface ventilators are on the whole the best means of ventilating sewers. In London they may be said to work well, and such nuisance as may from time to time locally arise is rather a useful indication of imperfect flushing than a danger to the health of the community.

OVER-PRESSURE IN SWISS SCHOOLS.

EDUCATION itself has not a little to learn, and in the European country where it exceptionally flourishes it is at present conning the self-imposed task contained in the copy-line, "Ne quid nimis." "Surmenage," or what we call "over-pressure," is now a recognised evil in Swiss schools, productive, as Sir J. Crichton-Browne and THE LANCET demonstrated in a memorable controversy, of neurasthenia and many other organic ailments, imperfectly summarised under that term. Nearly every canton in the Confederation can point to its cases, more or less numerous and aggravated, of "la neurasthénie scolaire," and the canton of Lucerne, at a recent conference of its "Régents," had under consideration a series of propositions for combating the evil. These were eight in number, and they came before the conference under the high educational authority of Dr. S. Stocker, who is also an expert in school hygiene. The first proposition would limit instruction in primary schools to reading, writing, and arithmetic, drawing ("dessin"), object-lessons pursued by preference in the open air, gymnastics, and singing. These branches should form the work of the six classes recognised in Swiss primary schools, but in such a way that drawing, object-lessons, and physical exercise should predominate in the lower classes. Proposition two would put an end in primary schools to all tasks to be performed at home, while in secondary schools they would be permitted only in a restricted degree. The third proposition would regulate the "passages to be learned by heart," limiting them to those which are "concise in style," and even then requiring them to be moderate in length and to be exacted only from the upper classes. The fourth would interrupt the lessons from half hour to half hour by pauses of ten minutes, and the fifth would entirely suppress "examinations on the work done at the close of the day." Proposition six would in summer and when the heat is great have the lessons conducted every afternoon in the open air, and proposition seven would interpose every six or eight weeks a vacation of one or more weeks in the class work. Finally (proposition eight), attendance at school should not commence till after the child has passed the age of seven. The innovations proposed by Dr. Stocker and the influential party he represents may appear too drastic, or, in other words, too indulgent to the pupil. That they have been recommended at all, however, is a proof of the evil they have to cope with—an evil certainly not lessening in an age of competitive examinations and nowhere tending to assume graver proportions than in the British Isles. Readers of THE LANCET may remember the opposition, neither well-inspired nor always fair, encountered by Sir J. Crichton-Browne and other medical authorities at the hands of officialdom headed by the late Mr. Mundella; but the crusade so energetically promoted, if at first resisted by "those in authority" with more zeal than knowledge, justified itself at length and suggested similar movements on almost identical lines in the New World as well as the Old. The vindication of the wisdom that started it came in steadily and strongly from Continental Europe in particular, and finds its latest exemplar in the nationality which, thanks to Pestalozzi and his adherents, has in many ways led the van in popular instruction.

CHLOROFORM ADMINISTRATION TO CANINE PATIENTS.

THAT dogs die readily under chloroform has been commonly held. Like many popular beliefs it has not only no foundation in fact, but is negatived by such evidence as exists upon the subject. The pariah dogs of India, as was shown in the Reports of the Hyderabad Chloroform Commissions, died rarely, unless the vigilance of the administrator was relaxed from his task. Professor Hobday, of the Royal Veterinary College, who has devoted especial attention to the subject of giving chloroform to dogs, has published statistics of 250 cases of chloroform administration with one death. The casualty was due to the rupture of the portal vein in an obese pug dog whilst it was struggling to free itself from its bonds. This death was probably not directly due to the anæsthetic. The apparatus in 180 cases was one which Professor Hobday devised and which allowed air to be drawn over the surface of the chloroform by the direct aspiration of the animal's breathing. The dogs were of various breeds, ages and sizes, and in all stages of condition, some being pregnant, and all being out-patients, so that no preparation was possible. Vomiting is not mentioned as a complication. The students gave the anæsthetic. The patients were usually anæsthetised in the "abdominal position, being the safest and most convenient for the production of anæsthesia; the patient was afterwards placed as required." One dog proved refractory.

and after twelve minutes a more concentrated vapour of chloroform was successfully employed. Three "untoward cases" occurred; two recovered after two minims of Scheele's hydrocyanic acid had been placed on the back of the tongue and artificial respiration had been employed, and the third, which died, was the fat pug referred to above. Professor Hobday regards hydrocyanic acid as antidotal to chloroform and directs the use of a "full medicinal dose" it in respiratory failure. But as artificial respiration is also used it is perhaps not certain what *rôle* the drug plays in the resuscitation. The lateral posture and rapid rhythmic compression of the ribs are the means of artificial respiration recommended, and there is no doubt that in most cases animals with pliant ribs can be rapidly restored by this method even without traction of the tongue, although that is often a valuable aid. The remaining seventy patients were chloroformed by Professor Hobday's other inhaler,[1] which is practically a small Wolff bottle, the animal breathing air which has been pumped over the surface of the chloroform and not as in Junker's apparatus driven through the anæsthetic. Professor Hobday's conclusions are that chloroform is not particularly dangerous to dogs or other animals unless improperly administered in an insufficiently diluted vapour and in an irregular manner.

VIEWING THE BODY.

AT an inquest recently held at Accrington by Mr. F. D. Robinson, the deputy coroner, the jury complained through their foreman of having to view the body and asked if they were compelled to do so by law. Mr. Robinson replied that they were so compelled. The foreman then asked if the coroner was not obliged to view the body also, and received an answer in the negative. It is, of course, the fact that the coroner is not bound by law to view the body, but in our opinion he certainly should do so, above all if he be a medical man, for certain appearances might very well be present which might in that case lead him to conduct his inquiry in some particular way or to adjourn the inquest so as to have a post-mortem examination made. This, in fact, is one one of the great reasons why we have always insisted on the propriety of the coroner being a medical man. The jury finally passed the following resolution, "The jury believe the viewing of dead bodies by juries to be useless, but if the law so directs we believe that the coroner's presence should be necessary." As now carried out the viewing of bodies is certainly rather a perfunctory ceremony, but, to quote the compilers of the Prayer Book, "the abuse of a ceremony doth not take away the lawful use of it."

A FURTHER IMPROVEMENT IN DISINFECTION BY STEAM.

SATISFACTORY as are the results obtained by the use of such apparatus as those of Lyon, Reck, and others, it must be admitted that the air confined in a closed chamber presents an obstacle to the penetration of the interstices of stuffed or packed goods by the superheated vapour which is not met with when "current" steam is employed, though this preliminary loss of time is more than compensated by the greater efficiency of the higher temperatures (from 220° to 240° F.) over the lower (from 170° to 180°), however prolonged. Since, however, the high temperature must be not only reached but maintained for about a quarter of an hour in the interior, it follows that the exterior of an article of clothing or bedding is exposed, more or less to its detriment, twice as long as is really necessary. This objection has now been completely overcome by a contrivance as simple as it is ingenious adopted in the apparatus with which the disinfection steamboat, *James Wadsworth*, engaged in the Port of New York, is provided, and which is described by Dr. Alvah Doty, the health officer of the port, in the August issue of the *American Journal of the Medical Sciences*. It consists in the exhaustion of the air in the chamber so as to produce a partial vacuum before the steam is admitted; and it is found that all other circumstances being alike a temperature of 240°, that of the steam in the chamber, is reached in the interior of a mattress or like article in less than three minutes with the vacuum, though without it from ten to fifteen minutes are required. The *James Wadsworth* oven is constructed with double walls and is encased in a jacketing of asbestos, which so prevents the loss of heat by radiation that the room in which it is fixed is not perceptibly warmer than others in the vessel or building. The special feature, however, is the steam exhaust, which consists simply of a powerful jet of steam coming directly from the boiler, where a pressure of 65 lb. to the square inch is maintained, passing across the mouths of 1½ in. pipes connected with the chamber of the oven, and with the space between its inner and outer walls. A similar pipe communicates between the chamber and the outer air, and the steam is admitted by one of 2½ in. in diameter, furnished with a regulating nozzle by which the pressure may be reduced to 15 lb. or 10 lb., which is sufficient for a temperature of 240° in the chamber. All these pipes are of course provided with stop-valves. The operation, after articles to be disinfected have been introduced and the doors securely closed, is to set the steam exhaust to work until the manometer or steam gauge indicates a pressure in the chamber and surrounding wall space of not more than twenty inches—a partial vacuum which is attained in about one minute. The valves are then closed and the steampipe opened, when the superheated vapour entering under a pressure of two atmospheres into the rarefied atmosphere of the chamber penetrates the densest fabrics and stuffed or packed goods, raising their temperature throughout to its own in three or four minutes. Ten minutes at 240° destroys bacilli of plague and anthrax, however protected, with absolute certainty, so that in fifteen minutes from the commencement of the process the steam may be turned off, when the steam exhaust is again set in action, though on the chamber only, until the former vacuum has been restored; then the air inlet is opened, and the exhaust still acting draws such a powerful current through the chamber that in two or three minutes every trace of moisture has been removed, and wearing apparel may be resumed within less than half an hour of its having been given up, an interval clearly none too long for the bath and cleansing of the persons of the wearers—in this particular instance mostly steerage passengers, immigrants from places where cholera, yellow fever, or other epidemic prevailed, or among whom cases had occurred on the passage.

[1] See THE LANCET, July 24th, 1897.

THE SANITARY OATH.

A CORRESPONDENT writes: "The profession has to thank Mr. Justice Day for the happy phrase—'the sanitary oath'—and does so gratefully, as he thereby acknowledges that the ordinary form of oath is insanitary. I well remember hearing him christen it and the tone of scorn in which he asked if anyone could believe that diseases were contracted by kissing a New Testament. I know of one New Testament that has been in constant use for thirteen years, and what there is left of it is not a pleasant thing to caress. Though the Scotch form of oath has, perhaps, not made such rapid progress as one might wish, it is doubtless steadily coming into favour with those best qualified to judge of its worth. The late Mr. Justice Cave stated in public that he liked to see the oath taken in this way, and last week, when the magistrate's clerk at Lancaster had to give evidence in a case of alleged perjury, he chose

this method. The great objection seems to be that the witness has to repeat the words and stand in a more or less constrained attitude, thus making himself very conspicuous. This to a man of a nervous or retiring temperament acts as a deterrent. Again, the time occupied is considerably greater than with the ordinary oath." Our correspondent concludes by asking if it would not be possible for the clerk to repeat the words of the English oath and for the witness to assent to them, not by kissing the book, but by raising the hand. This, we think, is a very good suggestion, but it would be at the present moment illegal.

A NEW OCULIST'S SEAL.

A NEW seal of a Roman oculist has recently been discovered in France, and its inscription may be found in the *Révue Archéologique*. This seal brings the number of known examples of these interesting monuments of medical antiquity up to about 200. The text upon the seal is, "Luxsuri Diasmyrnes post, impetum. Decorati cloron Opobalsamum." As in several other cases, the seal apparently bears the name of two oculists. The first remedy, diasmyrnes, or myrrh, Διὰ σμύρνης, is frequently prescribed on these seals for "post impetum (pituitæ lippitudinis), which Sichel, in reference to a passage of Celsus VI., 6, 1, translates as "after the muguous secretion of ophthalmia." All the great medical classics, of course, allude to it, as also do Scribonius, Marcellus, and Actuarius. Up to the present it has been found designated as a remedy for post impetum, by itself, upon six of the oculists' seals. Cloron, perhaps from χλωρος, green, is mentioned by Galen and Aetius, and occurs upon a seal found at Kenchester (see Simpson in the *Monthly Journal of Medical Science*, 1851, p. 250). Opobalsamatum, ὁποβάλσαμον, sugar of balm, is upon the seals only stated to be given by itself *ad caliginam* and that on only one seal. It is, however, mentioned upon two others and on a vase without the addition of the name of the malady to which it was applicable. Among other authors it is spoken of by Paulus Aegineta and Nicolas Myrepsus. It is frequently found upon oculists' seals associated with other collyria such as copper and oil of myrrh.

THE TREATMENT OF SEPTICÆMIA.

SEVERAL observations have been published on the treatment of pyæmic affections by means of yeast and its preparations. In the *Medical News* (New York) of Sept. 25th is a paper by Dr. Walter Courtney entitled "Yeast Nucleinic Acid in the Treatment of Septicæmia, with Report of Cases." For the purposes of this article Dr. Courtney defines septicæmia as "a general systemic invasion by one or more varieties of the pyogenic or putrefactive bacteria, their products, or both." Dr. Courtney had observed Dr. Vaughan's experiments with yeast nucleinic acid on rabbits and guinea-pigs which had been inoculated with the bacillus tuberculosis, the bacillus of tetanus, and the bacillus anthracis, and in different animals. The inhibitory and frequently curative effect of the nuclein treatment of these various infections was most marked, and Dr. Courtney subsequently tried it in the treatment of patients suffering from septicæmia. The results, as shown by ten cases published in full, were very satisfactory, only one case proving fatal; but, as Dr. Courtney candidly admits, the auxiliary treatment employed may have had something to do with the results; these aids were those "which effect free elimination by all of the emunctories that may be pressed into service, so as to rid the system of all the toxins possible," especially free purging. Dr. Courtney sums up his experience thus: 1. The yeast nucleinic acid should be given at the earliest possible moment that septic infection is suspected. The physician should not wait for the typical and classic symptoms as given by text-books. Dr. Courtney's observations have led him to believe that if delay is made until rigors, icterus, diarrhœa, delirium or apathy, profuse perspiration, and a foul-smelling and discharging wound are added to an abnormal increase in temperature and pulse-rate, and a restless alertness on the part of the patient, to convince the observer that it is septicæmia that must be dealt with, instead of surgical fever or something else, a serious waste of most valuable time must occur. 2. The nuclein should always, in septicæmia at least, be given hypodermically if possible, in order to secure prompt action of the given dose. If the 1 per cent. solution is used, at least from 30 to 40 minims, undiluted, may be given every three or four hours. If the 5 per cent. solution should be used, from 10 to 15 minims may be given every three or four hours, but ought to be diluted with distilled or at least with sterile water. This is necessary to avoid the local reaction which is sometimes caused when this solution is given undiluted. In Dr. Courtney's experience the 5 per cent. solution is preferable, for one reason at least—it is always stable. The 1 per cent. solution is not stable; it sometimes becomes cloudy and unfit for use. 3. The injection region should be examined daily in order to determine if local reaction can have anything to do with the patient's increased temperature and pulse-rate. If it has it is due to one of two things—either to insufficient dilution of the 5 per cent. nuclein solution or to imperfect preparation of the skin or syringe. In conclusion Dr. Courtney remarks: "The results of my work with yeast nucleinic acid in septicæmia are sufficiently encouraging to justify a feeling of confidence and a continuance of its use."

THE EARTHLY PARADISE.

BY the above title we do not mean the Vale of Kashmir, or Atlantis, or the Armenian Plateau, but we refer to the somewhat prosaic district of Montagu-square. It appears from a case tried before Mr. Curtis Bennett on Oct. 16th that the dwellers in that favoured region have a private Act of their own—namely, 54 George III.—empowering them to bring offenders before the magistrate for annoying people by selling newspapers "and noisily endeavouring to attract attention that they had newspapers for sale." Three boys were charged with this offence, and their respective mothers made to enter into their recognisances in £5 to bring them up for judgment if called upon. Mr. Curtis Bennett's remarks were so much to the point that we give them.

"In giving judgment Mr. Curtis Bennett said there was no doubt that these street cries had become an intolerable nuisance in London. Complaints were continually being made in the daily papers. A Bill for the suppression of these noises was brought in during the last session, but, unfortunately, there was no time for it to pass, and it suffered what was known as the 'massacre of the innocents.' People who wanted to be quiet on Sunday ought not to be troubled with the yells and cries of boys, which went on morning, noon, and night. They (the boys) were the plague and pest of every quiet citizen. Not only were people annoyed in their houses, but even when they went to church their ears were filled with these incessant cries. There was one thing—this case would have the effect of making property in Montagu-square more valuable, because it was only where the inhabitants had a special Act of Parliament that they could put a stop to such an annoyance. The time had come, however, when it must be stopped all over London, for it had gone beyond all endurance, and Sunday, instead of being the quietest day in the week, was becoming the noisiest."

We are glad to see that Mr. Curtis Bennett feels the annoyance. It is more than an annoyance—it has become a perfect curse, not only on Sunday, but on every day. The Strand is well-nigh unbearable from midday until any hour at night. Piccadilly-circus is a perfect bear-garden, and even Bond-street, which used to be one of the pleasantest streets in London, is now invaded by the "winner"

yelling fiend. It is quite unnecessary to yell. Many of the newspaper-sellers never do so and why should others? We have been hoping for some time that the London County Council would do something to put an end to the nuisance; the press has taken up the question, and it only remains for the police or the County Council, or Parliament, or all of them, to make London what it should be instead of what it is. Unfortunately, we cannot all live in Montagu-square, but it is only laziness and the hopeless dilatoriness which seems to affect our rulers in every department, except that of raising rates and taxes, which prevent other regions of London from being as well off.

THE NEW ISOLATION HOSPITAL AT OBAN: THE GENEROSITY OF A MEDICAL MAN.

As will be seen from the account given in another column by one of our own correspondents in Scotland, the much frequented Highland health resort of Oban has recently acquired an isolation hospital. As medical journalists we are always interested in hearing that any town is alive to the necessity of availing itself of the provisions of the Public Health Act, and specially so when the town in question is a health resort and also much frequented by holiday makers. But in the case of Oban there is more than this, for the new isolation hospital has been provided by the generosity of a member of our own profession—namely, Dr. McKelvie, a well-known and highly-esteemed practitioner in the neighbourhood. The cost has been about £2000, and, as will be seen from the account given by our correspondent, the building has been erected according to the latest plans and has every appliance for doing the work which will be required of it. In the fight against infectious diseases isolation is all-important, and Dr. McKelvie's munificence will be the cause of making the town of Oban a still more attractive resort than it is at present.

PURPURA HÆMORRHAGICA WITH MULTIPLE INFECTION.

PURPURA, like many other terms, should no longer be regarded as a disease, but as a symptom. It may be found in a number of diseases. Of these the infectious form an important group. The following case, published in the *Montreal Medical Journal*, August, 1897, by Dr. Hamilton and Dr. Yates, is not only of great clinical interest, but a contribution to an ill-understood subject—the etiology of purpura hæmorrhagica. A student, aged twenty-two years, healthy and well developed, noticed an eruption of bright red spots of the size of a pin's head, which began over the left ankle and then became numerous over both lower limbs. Three days afterwards a few spots appeared on the arms and then on the chest. The abdomen remained free until the sixth day. A slight knock on any part induced the appearance of extensive and severe bruising. On the night of the fourth day, not having felt ill yet, he was awakened with coughing and spitting of blood. On the following day he lost large quantities of blood from the nose, mouth, and throat, and felt for the first time weakness, rawness of the throat, and slight pains in the knees. On examination, the spots, which were also present on the face, were found to be hæmorrhages. Here and there were larger purpuric areas varying in size and colour. The conjunctivæ presented a few hæmorrhages. The nose was slowly but constantly bleeding. The lips were of good colour. The gums were not spongy. On the soft palate and left tonsil hæmorrhagic areas were seen. The temperature was 102·8° F., the pulse was 100, and the respirations were 24. The fundi were normal. Cultures of the blood were negative. The red corpuscles were 4,340,000, the white corpuscles 6000, and the hæmoglobin 87 per cent. The patient steadily became worse; the hæmorrhages were persistent and intractable; hæmoptysis, hæmatemesis, hæmaturia, and melæna occurred. The palate became sloughy and the eyelids became œdematous. The temperature ranged from 99° to 104°. Finally he became delirious and died on the twelfth day. A necropsy was made ten hours after death. There were many visceral hæmorrhages. The cardiac vessels contained air and the right auricle was distended with gas. The great vessels contained mixed frothy clots. The liver was emphysematous and floated in water. The bacillus aerogenes capsulatus, the staphylococcus pyogenes aureus, and a small bacillus (which on inoculation proved fatal to a rabbit) were cultivated from the blood and viscera. The clinical picture was thus similar to that of an acute infection; between good health and death there was an interval of only eight days. From the history of the case it is hardly possible that the bacillus aerogenes capsulatus was the primary infection; possibly it was the staphylococcus.

PROJECTED SANITARY IMPROVEMENTS IN NEW YORK CITY.

THE large centres of population in America are, with but few exceptions, far behind those of Europe in so far as sanitary arrangements and municipal government are concerned. Of all the cities of the United States New York is probably the most backward in many of the features that tend toward the preservation of the health and comfort of its citizens. Its tenement buildings and its lodging-houses are among the worst in the world and have been lately characterised by a prominent New York reformer as a disgrace even to America; public baths are conspicuous by their absence, and open spaces and playgrounds are few and far between. This state of affairs is in a large measure due to the apathy and indifference of its inhabitants, but there are very evident signs that public spirit is being aroused and interest awakened in any steps which may be taken to further the well-being of the community at large. The question of public baths will be one of the first to be dealt with when the municipal authorities of Greater New York have been elected. In 1895 a law was passed to the effect that "all cities of the first class should maintain such number of free public baths as the Local Board of Health might deem necessary." This law, however, was permissive, and in New York City at least its provisions have not been executed. In certain sections of New York City, and these the most densely populated, there is a great need of water both for domestic use and for the purpose of washing clothes. The suggestion has been mooted in several American cities that the German system of converting the basements of schools in the poorer districts so that they may be utilised as baths should be followed. This plan has met with much success in Germany, and Boston is about to try the experiment. The difficulties in the way of providing New York City with playgrounds of sufficient size in the lower part of the town are very great owing to the lack of space. Strong efforts are being made to overcome these difficulties, and two admirable small parks have recently been opened in the most crowded parts of the east side. Legislative authority has also been granted to the city to expend a million dollars (£200,000) a year for the purpose of providing and laying out parks and open spaces. Still the parks that have been opened up to the present time, excellent as they are, being for the most part covered with grass on which the children may not go, do not fulfil the object of playgrounds. A decision, too, has lately been arrived at by the mayor's committee on playgrounds and open spaces that no free school shall in future be constructed in New York City without being supplied with an open-air playground. In

consequence of the small area of uncovered ground the builders were at their wits' end, until finally the brilliant idea struck one of their number that the roofs of the schools might be utilised for the purpose, and thus the problem is to be solved. For a considerable length of time roof-gardens have been prevalent in all parts of America, but the experiment of aerial playgrounds will be altogether a novel one. Although, as has been already mentioned, the municipality of New York City has done little or nothing as regards the decent housing of the poor private enterprise has stepped in and shown the way. In the heart of the "Bowery," the Whitechapel of New York, there has been lately erected, and will shortly be opened, the most palatial building for the accommodation of the poor man that has ever been constructed in any country. This building is designed to afford sleeping accommodation for upwards of 1500 men and the charge is to be 20 cents nightly. The planning and construction of this lodging-house are due to Mr. Ogden Mills, a well-known philanthropist, and it is to be hoped that his example will be followed by other rich men even if it does not rouse the city itself to efforts in the same direction.

THE EFFECTS OF X RAYS ON THE ANIMAL ORGANISM.

MANY cases have been recorded in which the taking of Roentgen photographs of the living body has been followed by troublesome dermatitis and even by ulceration of the skin, but these lesions are by no means constant, and the exact method of their production is not fully explained. The precautions to be taken for the minimising of this inconvenience in the practical use of the rays were described in a communication made to the Congress of Neurology, Psychiatry, Medical Electricity, and Hypnology, which met at Brussels last September, by Dr. Foveaux de Courmelle, of Paris. He stated that these accidents were not infrequent in radiography, where the contact-breaker of the induction coil was made to vibrate slowly, and the Crookes's tube, being uncovered, gave off both x rays and cathode rays. In radioscopy, on the other hand, the motion of the contact-breaker is very rapid, the current is one of high frequency, and the vacuum tube is wrapped in black cloth which stops the visible or light-producing rays, but presents no obstacle to the x rays; under these circumstances it is known that injury to the skin is unusual, and even after prolonged exposure does not amount to more than superficial desquamation. Moreover, the interposition of an aluminium plate between the Crookes's tube and the patient obviates the accidents which many observers attribute to x rays produced by electrostatic currents or high frequency currents. It would appear that it is only the cathode rays that are injurious, and there is no difficulty in excluding them.

ACUTE PLEURISY A FORM OF TUBERCULOSIS.

THE time-honoured doctrine that exposure to cold alone can produce pleurisy, or, indeed, any internal inflammation, seems to be entirely disproved. That cases of acute pleurisy are often tuberculous has been known for some time; that they are almost invariably so seems now to be proved. Attention was first drawn to the subject by continental writers. In 1890 Dr. Alfred G. Barrs read a paper before the Leeds Medico-Chirurgical Society. As the result of carefully compiled statistics he confirmed the conclusion of Mayor that "the majority of cases of simple idiopathic pleurisy or pleurisy from exposure to cold conceal or reveal a tuberculous process." In 1893, however, Dr. William Osler, in his Shattuck Lecture, which we noticed,[1] concluded that two-thirds of the cases were non-tuberculous. But more delicate tests support the former conclusion. In 1895 Eichhorst published the results of injecting the fluid obtained from cases of serous pleurisy into the peritoneal cavity of guinea-pigs. Two-thirds of the animals developed tuberculosis. The *Boston Medical and Surgical Journal* of Aug. 5th, 1897, contains an important paper by Dr. George G. Sears. On injecting tuberculin in ten cases of acute pleurisy he obtained a reaction—rise of temperature—in nine. He limited the reaction to this by using a very small dose—one milligramme—increased if necessary. His results are nearly identical with those quoted by Netter, where thirteen out of fifteen reacted. The question is of practical importance. Though the prognosis as regards the attack is good there remains the tendency to develop other and more serious forms of tuberculosis. Measures to improve the general health may be of great service.

[1] THE LANCET, Sept. 16th, 1893.

THE TREATMENT OF HÆMOPHILIA WITH CHLORIDE OF CALCIUM.

PHYSIOLOGISTS have known for some time that lime salts play an essential part in the coagulation of the blood. This suggested to Dr. A. E. Wright the possibility of artificially increasing the power of coagulation. He made some valuable researches and showed that the administration of chloride of calcium caused a considerable increase. He found that in hæmophilia the coagulation time could be reduced about one-half. He therefore suggested the use of this salt in the treatment of hæmophilia and other diseases attended with recurrent hæmorrhages. His conclusions have been fully confirmed by the results, especially in the case of hæmophilia, where they are even brilliant. But the value of the treatment appears still to be but little recognised. The following case, published by Dr. Clifford Perry, and abstracted in a recent number of the *Revue des Sciences Médicales*, is very definite evidence. Severe hæmorrhage followed incision of a dental abscess in a case of hæmophilia. Only after four hours' energetic work, and packing the whole space between the alveolar process and the cheek with gauze saturated with strong solution of perchloride of iron, did the hæmorrhage cease. Later epistaxis and recurrence of hæmorrhage from the wound took place, which ceased when the patient was on the verge of collapse. After six hours alarming hæmorrhage again occurred, which all ordinary means failed to stop. Chloride of calcium was given in doses of 1·30 gramme every four hours. In a few hours the effect was marked; a firm clot formed and the hæmorrhage ceased.

ISOLATION IN SCARLET FEVER.

"I AM quite aware that I am making very startling statements, that deeply-rooted prejudice will both hinder and thwart the inauguration of this plan of treatment, that many will look upon it as absolutely Quixotic, and that it will take a long time to overcome both professional and public sentiment, so dreaded is the very name of scarlet fever. Nevertheless, scientific therapeutic medicine must prevail in the end." Such is the last paragraph of a remarkable article by Mr. Arthur Wiglesworth in our present issue. We fancy that most of our readers will agree with the sentiments expressed therein, although they may take objection to the words "deeply-rooted prejudice." We give the author full credi for having published his method of treatment and thus braved full criticism, but in his paper he states that it was read before the Liverpool Medical Society nearly four years ago, and that "subsequent experience has amply confirmed these views so far as practical observation can demonstrate their truth." Mr. Wiglesworth makes use of some very strongly expressed opinions, and we should be interested to know whether he so impressed any

of his hearers at the meeting of the Liverpool Medical Society at which he read this paper that they also had made trial of this method. For instance, one sentence runs: "I contend that it is rather our duty to do all that we can to spread the contraction of this attenuated virus to all the other children in the house, knowing that they will have a mild attack"; and in another place it is maintained that not only is isolation quite unnecessary, but "it is inexpedient." Would Mr. Wiglesworth propose to let the unattacked members of the household associate freely with the neighbours who are uncarbolised? Such propositions are entirely contrary to all accepted notions of the spread of infectious fevers, but as Mr. Wiglesworth has the courage of his opinions we have thought it right to submit his views to the criticism of the profession.

SERUM DIAGNOSIS OF TYPHOID FEVER.

THE diagnosis of typhoid fever has been considerably aided by the process which has become generally known as "Widal's test." The application of an observer's name to a disease, process, or test is not a satisfactory one, as is shown by the numerous terms under which exophthalmic goitre is known; but when one name has once become intimately associated with a disease or test, it makes confusion worse if the name is changed or another added. In the *Edinburgh Medical Journal* for this month a paper appears by Dr. Herbert E. Durham on "Serum Diagnosis," in which the writer points out that "if the name of any investigator is to be attached to the method of using the reaction of the blood serum of patients on appropriate bacilli, it should undoubtedly be that of Professor Max Gruber, of Vienna," who was the first to suggest the method, and who urged others to make observations upon the specific agglutinating power of the blood serum of persons who had passed through attacks of typhoid fever and cholera. Widal in Paris accepted the invitation given by Professor Gruber, published his results, and thus his name became associated with the test. Whilst, therefore, giving to Professor Gruber all due credit for being the first to suggest this method of diagnosis, much confusion would result from substituting his name for that of Widal. The latter has done excellent service in elaborating the test and deserves full recognition for his labours. Many reports are now to hand as regards the value of the test, and the general consensus of opinion seems to be that in this reaction we have a great aid to diagnosis in doubtful cases. Dr. J. C. Da Costa, writing in the *New York Medical Journal* of Aug. 21st, gives the conclusion he has arrived at from the observation of a large number of cases. He found that in more than 90 per cent. of cases of enteric fever a positive reaction may be obtained. In more than 90 per cent. of cases examined from the fourth to the seventh days of the disease inclusive a positive reaction may be obtained. In more than 3 per cent. of diseases other than enteric fever reactions are produced which are indistinguishable from typical typhoid reactions. Positive reactions are occasionally met with in individuals who have had enteric fever some months previously, but who are in good health at the time of the examination. Negative reactions are obtained with the blood of healthy persons who have not had enteric fever recently. Typhoid blood which has been kept in a dried state for eighty-six days will produce a typical reaction. In our present number we publish a paper on this subject by Dr. W. C. Brown, detailing his experience with Widal's reaction in the tropics. Its value in diagnosing between typhoid fever and some forms of malarial fever appears to be great. Dr. Brown also draws attention to the errors that may arise from false clumping and the precautions to be taken against their occurrence.

AT the Royal College of Physicians of London on St. Luke's Day the Moxon medal was awarded to the President, Sir Samuel Wilks, Bart., and the Weber-Parkes prize of 150 guineas and a silver medal to Dr. Arthur Ransome. A similar medal, called the second medal, was awarded to Dr. Peter Paterson, of Glasgow. The Baly medal was awarded to Professor Schäfer, of University College.

THE Morison Lectures of the Royal College of Physicians of Edinburgh will be delivered in the College Hall, 9, Queen-street, Edinburgh, by Dr. Alexander Morison, at 5 P.M., on Nov. 1st, 3rd, and 5th. The subject of the lectures will be "The Anatomy and Physiology of the Nervous Mechanism of the Viscera."

DR. A. T. SCHOFIELD delivered on Monday last, at the Library, Lambeth Palace, by permission of the Archbishop of Canterbury, the first of a series of lectures on Sanitation and Hygiene for the Clergy.

HER MAJESTY THE QUEEN has sent the Lord Mayor a donation of £50 to the fund being raised at the Mansion House for the relief of the sufferers by the epidemic of typhoid fever at Maidstone.

DR. D. C. M'VAIL has been re-appointed by Her Majesty the Queen in Council for another term of five years a member of the General Medical Council.

DR. FREDERICK ST. GEORGE MIVART has been appointed a Medical Inspector of the Local Government Board in place of the late Dr. F. W. Barry.

UNIVERSITY COLLEGE, ABERYSTWITH. — The inaugural address for the session 1897–98 was delivered in the Examination Hall of the University College of Wales, Aberystwith, on Oct. 13th by Professor Henry Sidgwick, LL.D., who took "The Pursuit of Culture as an Ideal" for the subject of his address.

ONE of our own Correspondents in Scotland writes:—"An interesting ceremony was performed in Oban on Monday, when Mr. Patten McDougall of Gullenach, a member of the Local Government Board for Scotland, opened the new isolation hospital for the burgh of Oban. For the last seven years the local authority has adopted the Notification Act, but it possessed no hospital for the reception and isolation of infectious diseases. The parochial board, and latterly the parish council, allowed the local authority the use of the hospital in connexion with the poor house for the reception of cases in emergency; and while this concession has proved a great benefit there were obviously many objections to its continuance longer than could be helped. The local authority three years ago secured four acres of ground upon the hill-side of Glenshellach—in every way a most desirable spot for such a purpose. When, however, the question of expense came to be considered inevitable delays occurred, and there appeared to be a danger of the indefinite postponement of the question, but at this juncture Dr. McKelvie, the senior medical practitioner of Oban, came forward, and in the most generous of terms offered a sufficient sum of money to the local authority to enable them to carry out the project which to-day has been successfully completed. The plans were approved by the Local Government Board for Scotland. The building is constructed upon the pavilion principle. There are four wards and an administrative department, and accommodation can readily be made for twelve patients. Situated some distance from the main buildings is a very complete department for the reception of infected goods and for their thorough disinfection. This department comprises an ambulance wagon room, an infected and disinfecting chamber, washhouse, and laundry. The infected and disinfecting chambers are fitted with a double-doored Washington Lyons steam disinfector, with Alliot and Paton's hot-air vacuum improvements, erected by Manlove, Alliot, and Co., of Nottingham. By this means the Notification Act can now be properly utilised"

JOHN ARDERNE AND HIS TIME.[1]

BY WILLIAM ANDERSON, F.R.C.S. ENG.

WHEN the council of the Medical Society of London honoured me by an invitation to write a paper for the first meeting of the session 1897–98, it appeared to me that we might be interested to pause in the midst of our progress through the closing years of the nineteenth century and transport ourselves for a brief space into the lurid and fitful light of the later middle ages, there to make, or renew, an acquaintance with an ancient and most worthy master of the craft of surgery whom we should all delight to honour.

The name of John Arderne is an unfamiliar one even for surgeons, although numerous manuscript copies of his writings are preserved in the British Museum and at St. John's College, Oxford, and appreciative reference to his work has been made by many high authorities on medical and surgical history—notably, by Dr. Daremberg in his "Histoire des Sciences Médicales," by the late Mr. John Flint South and Mr. D'Arcy Power in "The Craft of Surgery," and by my learned colleague, Dr. J. F. Payne, in the "Dictionary of National Biography." It is to the last-named gentleman that I owe my first introduction, now some years ago, to the subject of my discourse. The time at my disposal will allow only a very imperfect study of the man and the time, but if I am fortunate enough to induce a few of the members to inquire further into a curious page of surgical history my chief object will be achieved.

John Arderne, a contemporary of Chaucer, Wycliffe, Froissart, Petrarch, and Guy de Chauliac, belongs to a period of extreme interest in the evolution of general and surgical literature, and it will be seen that he within his sphere gave no mean aid towards the advance of a higher culture. Of biographical facts we have but little record, but it is known that he was born in 1307[2] and that he practised at Newark in Nottinghamshire from 1349, the year of the plague, until 1370, when, at the age of sixty-three years, he settled in London. Thenceforth he appears to have devoted his days to the publication of his experiences in the form of treatises upon medicine and surgery. It is surmised that he had been previously attached for a time to the English forces during the French wars in the capacity of field surgeon, for there is no doubt that he was well acquainted with France and its language, and that he had an extensive experience in the treatment of wounds; but although he calls himself "Chirurgus inter Medicos" there is nothing to show that he possessed a Master's degree or any formal licence for the exercise of his calling. However this may be, his writings prove that he was a man of clerkly attainments, with a good knowledge of Latin and French, and well read in the available literature of his profession, quoting freely from the works of the mediæval surgeons, the Arabs, and even from the Greeks. That he achieved fame as a surgeon is no less certain. He refers with pardonable pride to a number of distinguished patients whom his ministrations had restored to health, and he is said to have received from the Black Prince a grant of land in Connaught, and with it the right to prefix the noble particle "de" to his name. It is hard to say whether the position of an Irish landlord was more enviable then than now, but the colossal fees he was able to command from his wealthy clients probably rendered him independent of his Hibernian rentals. In his case, as in that of Guy de Chauliac, the literary labours which have preserved his memory were the outcome, and not the cause, of his success, for it was not until he had won an honourable repose that he found leisure to give the world the secrets of his practice. His writings, couched in fair Latin and dealing with nearly the whole of medicine and surgery as they were then known, were noteworthy productions of a reactionary but still illiterate age, and they appear to have been duly valued during the next three centuries, although none received the honours of the press except an abstract translation of an essay on Fistula, which was printed in 1588 by John Read as an appendix to a translation of Franciscus Arceus on Wounds.

To understand the position of Arderne it is necessary to recall something of the time in which he lived. His period was signalised as one of struggle for emancipation from a long-endured state of physical and intellectual bondage; but science was permitted to lag behind, while metaphysics, astrology, and alchemy took the place of solid research. The study of medicine was perhaps more deplorably in the rear of progress than any other branch of learning. For many hundreds of years the preservation of the lore of the Greeks from oblivion was left almost wholly to the Jews and Arabs, until at last the giant Europe, so long torpid, roused enough to stretch its stiffened members, first in Italy, then in France, then in England, but only to doze again and again before sinking into a new century of slumber. When Arderne was in his prime there was but one scientific centre in Europe where any pretence of surgical teaching was maintained. The once famous school of Salerno had already become effete. The Italian revival under William of Saliceto, Theodoric, Lanfrank, Mondini, and others, had given place to the old stagnation against which Bologna had made a valiant fight before sinking into premature decay. Paris, too, after listening to the teaching of Lanfrank and of Henri de Mondeville, had resolutely turned her face to the wall, and Montpellier alone, thanks in part to its geographical position, which brought it within nearer touch of Arab learning, was liberal enough to sanction the cultivation of anatomical and surgical science, not, indeed, within the walls of its university, but in extra-mural classes, in which, amongst others, Guy de Chauliac, the greatest surgical figure of the age, took a leading part. Even this tolerance soon died out, and Montpellier went the way of Salerno, Bologna, and Paris, but not until the work of Guy de Chauliac and John Arderne was ended. In England the age of Chaucer and Wycliffe made no provision whatever for medical progress, and there was no school of anatomy or surgery throughout the land, and no English contributors to the literature of the subjects could be said to exist, if we except such theoretical references as may be found in the works of Gilbertus Anglicanus and John of Gaddesden, written, like all medical treatises of the time, in Latin. It is true that the writings of the Arab physicians, which gave an imperfect sketch of Greek surgery, and those of William of Saliceto, Roger, Theodoric, the Four Masters, Lanfrank, de Mondeville, and after 1363 the masterpiece of compilation, the *Chirurgia Magna* of Guy de Chauliac, were also procurable in Latin guise, but the knowledge to profit by them was rare indeed in the ranks from which the representatives of English surgery were drawn. In the fourteenth century the lot of those of our countrymen who fell in need of surgical ministrations was a sadly precarious one. The art was regarded by the educated physicians then and for centuries later as beneath their dignity. As expressed by our Elizabethan surgeon, John Read, in the doggerel which he and his fellows loved to prefix and append to their professional writings:—

> "Chirurgery moreover is
> abhorred of the Phisition,
> Who doth esteeme it as a thing
> to vile for his profession."

Outside this august and highly conservative body were several classes of practitioners into whose hands surgery was allowed to sink. First of these came the Masters of Surgery—a small body of men, here, as in France, distinct from the Barber surgeons, but scarcely yet banded into the association that somewhat later strove so well to secure a fitting status for their calling. They held no special position in the social scale of the time and appear to have sprung originally from the same level as the barbers, but to have won especial experience and recognition by the exercise of surgery in the wars and civil disturbances of the time, and in certain instances to have gathered some scholastic training. With this group John Arderne is probably to be classed, and another example may perhaps be found in the person of the author of the remarkable anatomical manuscript brought to light two years ago by Dr. Payne.[3] It is these men, few in number, weak in influence though they were, that we must regard as the most honourable representatives of surgery, and there is no doubt that a dozen men of the stamp of Arderne would have changed the whole history of English surgery. Yet the chirurgery of the Master Surgeon was scarcely a handicraft at all, for the hand played little part in it except in the application of ointments and plasters. The Barber surgeon, the bone-setter, and the travelling specialists did the rest.

[1] A paper read before the Medical Society of London on Oct. 11th, 1897.

[2] Sloane MS., No. 75.

[3] Brit. Med. Jour., Jan. 25th, 1896.

Next to these came the Barber surgeons, who, thanks to the successive decrees of the Popes in the twelfth, thirteenth, and fourteenth centuries against the practice of medicine and surgery by the priesthood, had inherited the manual functions of the erstwhile monkish physicians, and had begun to develop ambitions above the blood-letting and tooth-drawing, which for some mysterious reason had long been attached to their trade. They had not, however, reached or merited any standing of importance, although as early as 1375 they were strong enough in London to appeal successfully to the corporation for the right to summon persons who practised surgery without due qualification. They themselves were little more than uneducated mechanics, to whom the literature of surgery was a closed book. Much experience must indeed have fallen to their lot, but it fell on a barren soil. Their regular practice seems to have been limited to venesections and dentistry, and to the treatment of contusions, wounds, ulcers, and a few other simple affections; but all ailments outside these were blindly attacked or more discreetly left alone. Neither the Master Surgeons nor the Barber surgeons attempted to deal with the whole of surgery. Beyond the mere opening of a vein or an abscess or the extraction of a tooth there were few operations that were held within the scope of orthodox practice. Arderne says that he knew no man in his time "in all England or in lands beyond the sea" who could cure a fistula—he alone did it. Even operations so simple and then so necessary in warfare as the extraction of arrow-heads were often surrounded by absurdly superstitious formalities. The surgeon and patient were to be clean shriven and to say three Paternosters and three Aves in worship of the Trinity: finally, after a Latin adjuration to the arrow, bidding it come out in the name of God, the surgeon's fingers were permitted to attack the actual task, which was supposed to be miraculously facilitated by the tribute to the Celestial powers. Hæmorrhage, except from a vein opened under proper astrological conjunctions, was a terror to the surgeon, upon whom the idea of the ligature had not yet dawned; strangulated hernia and a score of other grave but remediable conditions were left to the merciful hand of death, and many common affections that should have been perfectly within the sphere of the general surgeon, such as fractures, dislocations, stone in the bladder, &c., were abandoned without a struggle to a low class of specialists of whom we may next speak.

The Specialists constitute the third group of surgical practitioners, perhaps outnumbering both the Master Surgeons and Barber surgeons. The whole country was pervaded by a troop of foreign and native bone-setters, lithotomists, herniotomists, oculists, and others, following traditional methods unguided by anatomical knowledge, but sometimes by dint of experience attaining a fair amount of skill and success and living upon an honestly acquired reputation. Most of them, however, travelled from place to place advertising themselves by barefaced methods not even yet quite extinct or inefficacious, often mingling their handicraft with arrant imposture, and ready to shift their quarters with all needful celerity as soon as the results of their operations threatened trouble to themselves. Such men for this reason were popularly known in France as *coureurs*. That they should be permitted to exist and thrive might perhaps be regarded as the greatest indictment of the surgery of the time were it not that the bone-setter, as ignorant and as impudent as his forbears, is still amongst us even in this last decade of the nineteenth century.

Below all of these there was still another class of pretenders to surgery—a motley crew of base empirics of both sexes, without even a pretence to real knowledge, trading upon herbs, ointments, embrocations, pills, amulets, and the like, mainly for use in such ailments as were capable of recovery in defiance of their intervention. It is unnecessary to speak of them further, their name is legion and their methods eternal, but in that day the orthodox was so little remote from the heterodox in science that poor suffering humanity had small chance of escape.

Finally, outside these various practitioners for gain lay the Amateurs, a numerous body, often of gentle birth, and nearly all of the gentler sex, trained by reading or personal instruction in the use of herbs, drugs, and simple dressings, and prepared to act on emergency as nurses or doctors amongst their families, friends, or dependents. Students of Chaucer may find an inkling of the domestic medical lore of the period in the "Nonne Preeste's Tale," and they may recognise that Damoysele Pertelote still survives in the remoter parts of our provinces. There is little doubt that many of these kindly and charitable people did much good in their generation, and knowing what we know of the bulk of their professional rivals we may think the patients who came under their tender ministrations were not always the most unfortunate amongst sufferers in mediæval England.

Such, then, was the state of surgery when John Arderne came upon the scene. Shorn of almost all the dignity and power it had acquired under the Greeks its prospects were of the gloomiest. What Arderne did towards its revival may be seen by a study of his works.

There are no less than 22 Arderne manuscripts in the British Museum in the original Latin or in early English translations, some of course repeating or overlapping others in matter.[4] They treat more or less fully of almost every kind of medical and surgical disease then known, mainly from the clinical aspect, and with abundant directions for treatment, and nearly all are illustrated with drawings of diseases, surgical appliances, medicinal plants, and other things appertaining to the text. Some of the sketches are curious. One, representing John Arderne examining a case of fistula in ano, has been discreetly reproduced (without the patient) in South's "Craft of Surgery"; another shows the astrological relations of the different parts of the body; fistulas, penile sores, acne rosacea, facial tic, and many other conditions are recognisably figured, and one MS. even shows a portrait of a mad dog. There are, however, no anatomical diagrams. The text consists partly of short essays on the treatment of various symptoms and ailments, partly of elaborate dissertations upon certain sections of surgical disease, as fistula in ano, eye diseases, stone in the bladder, and on wounds inflicted by various weapons, closing with descriptive accounts of the drugs and preparations employed by the author, and careful directions for their use. There is little or no reference to fractures and dislocations, and the only operations described in detail are those for fistula in ano and for cutting a stone out of the urethra. Mention is made of a special instrument for crushing a vesical calculus. Avicenna, Haly Abbas, and the French and Italian surgeons are freely quoted, as well as certain of the writings of Hippocrates and Galen, and the learning of the author is frequently shown also by the use of Greek, Arabic, and French expressions. There is no attempt, however, to construct a complete and systematic arrangement of the diseases the mediæval flesh was heir to from crown to toe after the manner of many of the earlier writers. The English translations are all of early date, the most important of the number being attributed to the beginning of the fifteenth century, and hence probably representing as nearly as may be the language that John Arderne himself would have used in his professional discourse. As this is acknowledged to be the most interesting and original section of the author's work, and will soon, I trust, be brought within reach of the profession and public by the Early English Text Society, I propose to speak of it so far as the time at my disposal will allow. I have to express my thanks to Dr. Furnivall for the loan of a complete transcript which has enabled me to study the style and matter more carefully than would otherwise have been possible. The section in question treats of ischio-rectal abscess, of fistula in ano, and other affections of the lower end of the bowel, and of sinuses in connexion with the bones and joints, and is supplemented by a description of the composition and uses of the various preparations employed by the author, and prefaced by some words of counsel to the neophyte who aspires to success in medical practice. The personality of Arderne is perhaps best shown in this quaint preface. It has already been printed *in extenso* in South's "Craft of Surgery," but a few paragraphs may be quoted now. The introduction, entitled "Of the Manner of the Leech,"[5] begins in a spirit of pious humility and charity that reappears constantly in the course of Arderne's writings. The rest is too pithy to need comment.

"First it behoveth him that will profit in this craft that he set God afore evermore in all his works and evermore call meekly with heart and mouth his help, and sometimes visit of his winnings poor men after his might, that they by their prayers may get him grace of the Holy Ghost. And that he

[4] List of Arderne MSS. in the British Museum, copied from Catalogue of Manuscripts, vol. ii.:—2002, 238.1, 3844, 6.8, 241.1, 3548, 2122, 347.1, 795.2, 56, 76.1, 277.2, 563.2, 2271, 75.12, 335, 76, 3428, 89E, 85B, 86D, 29.301.

[5] In these quotations I have ventured to modernise the spelling, but have kept strictly to the language of the translation.

be not yfounden temerary or boastful in his sayings or in his deeds. And abstain he him from much speech and most among great men. And answer he slyly [cautiously] to things asked that be be not ytake in his words forsooth if his works be ofttime known, for to discord from his words and his behests he shall be holden more unworthy and he shall blemish his own good fame: wherefore saith a versifyer, '*Vincat opus verbum, minuit jactantia famam*'—'(let) work overcome thy word, for boast lesseneth good lose (reputation).'

"Also be a leech not much laughing nor much playing. And as much as he may without harm flee he the fellowship of knaves and unhonest persons. And be he evermore occupied in things that beholdeth to his craft, either read he, or study he, or write or pray he, for the exercise of books worshippeth a leech. For why, he shall both be holden and he shall be more wise. And above all this it profiteth to him that he be founden evermore sober, for drunkenness destroyeth all virtue and bringeth it to nought, as saith a wise man, '*Etrictas frangit quicquid sapientia tangit*' (Drunkenness breaketh whatso wisdom toucheth)."

The next counsel is one that cannot even yet be regarded as superfluous: "Scorn he no man, for of that it is said, '*Deridens alios non inderisus abibit*' (he that scorneth other men shall not go unscorned). If there be made speech to him of any leech, neither set he him at nought nor praise him too much, or commend him, but thus may he courteously answer: 'I have not any knowledge of him, but I learned not nor I have not heard of him but good and honest.' And of this shall honour and thankings of each party increase and multiply to him, after this, 'Honour is on the honorant and not on the honoured.'"

Next he becomes more purely worldly and passes on to private counsel not intended for lay ears: "When sick men forsooth or any of their byside [household] cometh to the leech to ask help or counsel of him, be he not to them over few [brief] nor over familiar [homely] but mene [gracious] in bearing after the askings of the persons, to some reverently, to some commonly, for, after wise men, 'overmuch homeliness breedeth despising.'"

"If he will favour to any man's asking make he covenant for his travail and take it beforehand.[6] But advise the leech himself well, that he give no certain answer in any case, but [unless] he see first the sickness and the manner of it, and when he hath seen and assayed it, though it seems to him that the sick may be healed, nevertheless he shall make prognostication to the patient [of] the perils to come if the cure be deferred. And if he see the patient perceive busily the cure then after that the state of the patient asketh (according to the position of the patient) ask he boldly more or less, but ever beware of scarce askings, for over-scarce askings setteth at nought both the market and the thing. Therefore for the cure of fistula in ano, when it is curable, ask he competently of a worthy man and a great. An hundred marks or forty pounds, with robes and fees of an hundred shillings for the term of life by year. Of less men forty pounds or forty marks ask he without fees. And take he not less than a hundred shillings, for never in all my life took I less than an hundred shillings for cure of that sickness. Nevertheless, do another man as him think better and more speedfully."

"And if the patients or their friends or servants ask by how much time he hopeth to heal it, evermore let the leech byhete [state] the double that he supposeth, that is if the leech hope to heal the patient by twenty weeks—that is the common course of the curing—add he so many over, for it is better that the term be lengthened than the cure, for prolongation of the cure giveth cause of despairing to the patients when trust to the leech is most hope of health. And if the patient consider or wonder or ask why that he put him so long a time of curing since that he healed him by the half, answer he that it was for that the patient was strong-hearted and suffered well sharp things, and that he was of good complexion and had able flesh to heal, and feign he other causes pleasable to the patient, for patients of such words are proud and delighted."

"Also dispose a leech him that in clothes and other apparelings he be honest, not likening himself in appareling or bearing to minstrals, but in clothing and bearing (ob)serve he the manner of clerks. For why, it seemeth any discreet man yclad with clerk's clothing for to occupy gentleman's boards. Have the leech also clean hands and well shapen nails and cleansed from all blackness and filth."

"And be he courteous at lords' boards, and displease he not in words or deeds to the guests sitting by. Hear he many things, but speak he but few, for a wise man saith: 'It (be)seemeth more to use the eyes than the tongue.' And in another place, 'If thou had been still thou had been holden a philosopher.' And when he shall speak, be the words short, and as much as he may fair and reasonable and without swaying. Beware that there be never founden double words in his mouth, for if he be founden true in his words few or none shall doubt in his deeds."

"Have also a young leech good proverbs pertaining to his craft in comforting of patients."—Here follow other curious examples of bedside exhortations from Holy Writ, heathen philosophy, and homely proverbs—"Also it speedeth that a leech can talk of good tales and of honest that may make the patients to laugh, as well of the Bible as of other tragedies, and any other things of which it is nought to charge, while that they make or induce a light heart to the patient or sick man."

"Discover never the leech unwarily the counsels of his patients as well of men as of women, nor set not one to another at nought though he have cause; that he be not guilty of counsel, for if a man see ye heed well another man's counsel he will wist better on ye."

"In conclusion, many things, forsooth, well (bene) to be kept of a leech without (besides) these that are said afore, that may not be noted here for over much occupying. But it is not to doubt that if the foresaid be well kept that they shall give a gracious going to the user to the height of worship and of winning, for Cato saith, '*Virtutem primam imputa compescere linguam*' (the first virtue trow you to be to refrain the tongue)."

Passing to the technical chapters of his work we may take first his account of fistula in ano. Every surgeon who reads this attentively will admit that it stands almost alone amongst English surgical writings down to the time of Richard Wiseman as a record of painstaking clinical observation and of practical research after success in treatment. His description is rich in experience and his methods are recited with a remarkable fulness of the kind of detail that only experience can teach. It is true that his operations were identical in principle with those practised by the Greeks, but he had devised appliances which in his hands gave results that we should not be ashamed to claim in our day. There is, indeed, little that we know in this particular item of surgery that he did not know as well or better. I fain would quote some of his crisply written sentences, but it may not be.

Following the section of fistula is a description of cancer of the lower end of the rectum under the name of "bubo in the lure." He not only recognises the nature and fatality of the disease, but sets forth clearly its distinctions from chronic diarrhœa or dysentery and speaks of the injury that may be done by the administration of unsuitable remedies under a wrong diagnosis. Prolapsus ani he describes as a "going out of the lure." His notes upon fistulæ, or sinuses in the fingers, the legs, over the joints, and in other places are more superficially treated, but are still personal observations that appear to owe nothing to tradition. The essay on hæmorrhoids is of a somewhat different kind. Here for the first time he appears as the compiler, conscientiously avowing his indebtedness to the older masters of his craft—to Bernard of Gordon, Richard, Roland, Roger, Gilbertus Anglicanus, Guy de Chauliac (Mayster Guy) "and other expert men whose doctrine he had beholden and seen." This is less happy than his more practical and original writings and is more obscured by the nebulous theories of his predecessors. Nevertheless, his treatment is fairly sound, although he has been unable to shake off some ancient superstitions shared by wiser and less wise men than himself—for example, that the surgeon must not operate about the anus when the moon is in Scorpio, Libra, or Sagittarius, because these signs token the part in question, and that hæmorrhoids and menstruation are provoked by phlebotomy of the internal saphenous vein, while blood-letting from the external saphenous vein has the directly opposite effect; but these and other beliefs were inevitable in an age when the physiological and astronomical dicta of the ancients were accepted like Holy Writ as unassailable by human reason and beyond appeal.

Passing next to the discussion of clysters in constipation our author finds himself again upon the safe foundation of

[6] In another place he says: "And then accord they of covenant, of which covenant all excusations yput aback, take he the half beforehand."

an extensive experience, and he displays a faith in his methods capable of moving mountains of obstruction. "Be the leech not negligent nor foolhardy in his working with clysters, for it is a work of a perfect mystery, for the which I have gotten a hundred times great honour with lucre in diverse places. For why? At London when Lombards ofttimes administered clysters in their manner to colic men and other men constipate, I, forsooth, with the aforesaid manner of clystering at the first time, within the space of a furlong or two, I delivered the patient for certain, the Lord being mene." It will be noticed that although he refers somewhat contemptuously to the pretentious quacks that were his rivals, he never condescends to the violent and undignified diatribes in which his Elizabethan successors were wont to indulge under like provocation.

The final section, devoted to the enumeration of the preparations used in surgery, is full of interest. Many of his ingredients, such as arsenic, verdigris, sulphate of iron, alum, &c., were powerful as stimulants, astringents, or antiseptics, and appear to have been used with judgment; and with characteristic honesty he tells of his mistakes as well as of his successes—how, for example, he had caused sloughing of the leg of a patient, with subsequent necrosis of the tibia, by the unwary use of a mixture of sublimed arsenic and orpiment. Another set of applications consist of oily preparations of the petals of roses, violets, and camomile flowers, oil of sweet almonds, and oil of juniper, the uses of which are clearly and simply stated, while other much-lauded drugs, such as woodbine and scabious, have succumbed to changes of fashion like so much of the materia medica of the present century. He, however, avoids the loathsome elements, that so commonly disgrace the formulæ of his and much later times, and there is but one of his prescriptions that shows an element of superstition, the so-called *sanguis veneris*. This for the poor is a compound of Alkanet with olive oil—a safe, simple, and cheap application for wounds and ulcers; but for the wealthy it is made up more expensively with aloes, myrrh, and other drugs, and contains as its most valued ingredient "the blood of a maiden virgin or of a maiden damosel about nineteen or twenty years which was never impregned tho' she be corrupt"—for, adds our cautious author, "virgins cometh now full seldom to twenty years." The blood, too, "must be drawn out in the full of the moon, the moon being in Virgine, and the sun being in Piscibus." Another compound called "oil of Masticus" (Masticus one ounce, thuris albi Alexandriæ half an ounce, ol. rosæ 1lb), of sufficiently simple composition, must be referred to, for its virtues, as set forth in all good faith by Arderne, might give a lesson to the modern advertiser of electric belts or liver pills. "It helps," says he, "to every akying of stomach, joints, shoulders, liver, spleen, helps to man in the ethic in the phtisic, or disposed to the lepra and to the morphœa [morfie] and to old men and consumed. And anointed, it moisteth the skin and removeth and restoreth the flesh consumed, and comforteth the stomach and maketh it to defy chills; it represseth abominations in the stomach, it giveth appetite, it sharpeth the minde, it consumeth all cold passions. Finally, it availeth to whole men and to sick in all necessities." It is strange that with so all-embracing a remedy he did not regard the rest of his pharmacopœia as superfluous.

Of internal medicines there are few, but two of the number depend on opium for their chief effect. One of these is recommended as an anæsthetic. "so that the man shal not feel whatsoever is done to him," and the other had won a reputation of a more sinister kind, "to make a man sleep against his will after the manner of ribalds and browsers in France, that fellowshippeth them by the ways to pilgrims, that they may rob them of their silver when they are asleep."

With these our citations must end. It is difficult at the present time to adjudge John Arderne's claim upon posterity, but when we remember into what low repute the art of surgery had fallen in his day in England, and how honestly and successfully he strove to elevate it by his example and teaching, we can scarcely do him too much honour. His art was not all we now understand as surgery, although he at least revived two of the ancient operations of the Greeks, but he was a true clinical observer and based his treatment on experience and reason rather than on precedent and superstition. He was, moreover, almost the only English surgeon of his century who is known to have combined the actual practice of his calling with a scholastic training sufficient to master the surgical literature then available and to commit his views and results clearly to writing. It would be too much to expect that he should rise entirely above the astrological, humoral, and circulatory myths of his day, but he allowed his theories to influence him far less than his experience, and he stands as a singularly capable surgeon according to his lights and opportunities, holding his craft in due honour, and doing more than any Englishman of his century or of the three following centuries to raise it in the world's esteem. If we compare him with his great French contemporary, Guy de Chauliac, we shall find in both the same straightness of purpose, the same solidity of reasoning, and the same harmless superstitions; but while Guy de Chauliac was a compiler of genius with a remarkable literary method and sense of completeness Arderne was perhaps the better clinical student and the more practical surgeon; but as a writer, although he had considerable power of expression and an amusing aptitude for terse and pointed quotation, he was somewhat lacking in that gift of order which in an over-strained and often misapplied form distinguished the earlier European surgical authors. The Frenchman constructed a surgical text-book that in its way stood far above anything that had preceded it, and guided the whole of Europe for two hundred years; the Englishman left an assemblage of original observations that offered better lessons to his followers than could be drawn from any digest of the writings of his predecessors. It cannot be said that either added any striking facts or principles to the legacy of the Greeks.

Of the man himself his book conveys a vivid picture. It is easy to see him as the leech of courtly and obliging manners, sober in attire and moderate in speech, and endowed with a self-restraint born of self-respect, with a tact that bore him well through the many difficulties that must have beset the thorny path of the chirurgeon in his day, and with a strong common sense that never rose too near the dangerous level of genius; a good man and true, kindly and honest, but shrewd withal, with a quick eye to the main chance and a capacity for raising expediency to the dignity of principle. He was through all a surgeon, a scholar, and a gentleman, and in the records that he bequeathed he stands before us as one whom we, his professional descendants, may accept with pride and veneration as the Father of English Surgery.

PRESENTATIONS TO MEDICAL MEN.—Mr. Richard Turner, M.R.C.S. Eng., L.S.A., on his retirement from the post of medical officer of Her Majesty's Prison at Lewes, Sussex, after upwards of 37 years' service, has been presented with an illuminated address, together with a silver salver, suitably inscribed, by the officers of the prison past and present, and also a silver cigarette case by their wives, in recognition of his unfailing courtesy and kindness at all times freely rendered to themselves and their families.—The members of the Haddo Lodge of the Loyal Order of Ancient Shepherds entertained Dr. Beveridge, their lodge surgeon, to supper in the Waverley Hotel, Aberdeen, on Oct. 2nd, and presented him with an emblem of merit, handsomely framed, as a token of appreciation of his professional services to the Lodge.—Last week certificates and badges were presented to the successful candidates of the St. John Ambulance Class formed by the employés of the East Depôt of the Great Western Railway Company, Bristol. After the distribution Mr. E. H. Warner, M.D., C.M. Edin., was presented by the class with a silver-mounted walking-stick suitably engraved as a recognition of his services as honorary lecturer.—Mr. J. T. J. Morrison, M.B. Cantab., F.R.C.S. Eng., Mr. A. T. Holdsworth, M.D. Brux., M.R.C.S., L.S.A., and Mr. E. C. Bark, L.R.C.P. Lond., M.R.C.S. Eng., have each been the recipient of a silver cigarette case from the members of the ambulance classes of the Birmingham city police force as thank-offerings for their valuable services to the classes.—Mr. F. MacDougall, L.R.C.S., L.R.C.P. Edin., lecturer to the Runcorn Branch of the St. John Ambulance Association, has been presented by the class with a silver inkstand for his instructive ambulance lectures.—On Oct. 13th, at the Memorial Institute, Almondsbury, Gloucestershire, Mr. Robert Cecil Leonard, M.B. Durh., L.R.C.P. Lond., M.R.C.S. Eng., who for the past two years has acted as assistant to Dr. J. W. Irwin, was presented by his friends and patients with an inlaid mahogany bureau, accompanied by a book containing an address and the names of 158 subscribers, on the occasion of his leaving the neighbourhood.

The Lancet Special Commission

ON THE

METROPOLITAN WATER-SUPPLY.

XVII.[1]

NEW RIVER COMPANY.

HISTORY.

THE full style and title of the Company is "The Governor and Company of the New River brought from Chadwell and Amwell to London." A complete history of the New River and of the people and places connected with it would form a large volume. In the present brief sketch we can do no more than mention the more important points connected with the origin of the enterprise, of the difficulties which had to be encountered, and of the chief changes which have taken place since the original design was carried out. No account however brief would be complete if no mention were made of Hugh Myddelton, by whom the original work was supervised if not actually designed. Unfortunately, so much fiction has been mixed up with the facts recorded of this remarkable man that it is not easy to deal so briefly as could be wished with his share of the undertaking, and his relations with the Corporation of London which initiated the scheme and James I. who saved the adventure from ruin by providing money for its completion.

The original project was to supply London with water from two Hertfordshire springs and to conduct the water in an open and tortuous channel to some convenient place near the city. Some writers have curiously exaggerated the greatness of the undertaking, which was a trivial one compared with the engineering feats of the Romans; nor was the idea a new one. Years before the New River was projected Sir Francis Drake, had supplied Plymouth with water from a source seven miles distant from the town by means of a channel twenty-four miles in length. It seems probable that Drake's conduit may have suggested the New River scheme to the London citizens, and led them to get the sanction of Parliament to the project.

In the year 1606 an Act (3 Jac. I., c. 18) was passed to authorise the Corporation of London to bring water from Chadwell and Amwell in Hertfordshire for the supply of the city. It was provided that the necessary land might be taken, but that the owners should receive compensation the amount of which was to be assessed by Commissioners appointed by the Lord Chancellor. The Corporation was to maintain the "cut" or river which they were to make, and the authority over it was to be vested in the Commissioners of Sewers. In the following year, 1607 (4 Jac. I., c. 12), another Act was passed by which the Corporation were enabled to convey the water, if they thought fit, through a brick or stone culvert. The first of these two Bills was strongly opposed and the claims of a Captain Colthurst[2] were considered at some length in the House of Lords. The Corporation of London, however, did nothing to carry into effect the provisions of the two Acts of Parliament which they had obtained. In March, 1609, the Common Council conveyed to Hugh Myddelton the power to carry out the work which they found themselves unable or unwilling to do. This agreement was supplemented by an indenture, dated April 21st, 1609. Myddelton commenced the work as quickly as possible. He had, however, many difficulties to contend with. The owners and occupiers of the land through which the river was to pass gave him no little trouble. It is indeed small matter of wonder that many of them objected to have their land taken, and that the possible evils prophesied as the result of this undertaking were grossly exaggerated.

The Record Office contains a paper entitled "The Effect of a Bill to Repeal the Acts 3 and 4, Jac. I., for bringing the New River into London, &c." The paper consists of the objections classified, and each objection is answered, the objections and answers being written side by side in two parallel columns. It is apparently a careful compilation from a number of documents stating both sides of the question. In a different and bolder hand, not as part of the list of objections and answers, is recorded the fact that at that time Myddelton had expended £3000 on the work in progress. Amongst the objections urged against the making of the river it was stated that the meadows would be turned into bogs, that farms would be cut up into small pieces, and that the river was dangerous to man and beast.[3]

The agitation against the New River attracted much attention in the year 1610; it seemed for a time possible that the scheme might be overturned by Parliament, and a Bill was brought in to repeal the New River Acts. A letter written on May 9th of that year says: "Much ado there is in the House about the work undertaken and far advanced already by Myddelton for the cutting of a river and bringing it to London from ten to twelve miles off through the grounds of many men, who, for their particular interests, so strongly oppose themselves to it that they are like, as it is said, to overthrow it all." The Bill in Parliament was referred to a committee, and on July 16th the report of the sub-committee was given as to the river, which they had inspected. Fortunately for Myddelton, Parliament was prorogued on July 23rd and did not meet again until 1614, by which time the New River was finished. This opposition, however, was not the only difficulty with which Myddelton had to contend. In 1610 there was a rival scheme for supplying London with water from the Lee at Hackney.[4] This must have been an anxious time for Myddelton, for there was great danger that his scheme would fail. He had made the canal as far as Enfield, but he found that he had spent all his money, the expenses of the work having proved considerably more than he expected. It is usually said that he applied to the Corporation of London for a money grant, but there does not seem to be any truth in this statement, which is given on no reliable authority and has been copied from one book to another. Myddelton applied to James I., and the King agreed to grant the necessary money for completing the work, the conditions being that half the business should be his, and that he should pay half the past and future expenses of the work. It will be seen from what has been said that Myddelton displayed great sagacity in invoking the King's aid at this juncture, and from the time at which he became a part owner of the New River the rival scheme gave no more trouble. The terms on which James I. became part owner of the enterprise were by no means unfavourable to Myddelton.[5] In the after-history of the New River it appears that James was of considerable use in supporting the business against competition. The matter was of great importance to the financial success of the undertaking, and we will, therefore, take this opportunity of anticipating events and saying all that is necessary on the subject in this place.

It happened that in the year 1617 some brewers applied to the "City Lands" Committee for the lease of the waterhouses at Dowgate, offering to maintain them and supply the conduit with water; they were to have any surplus water for their brewhouse without Cripplegate. Court influence was brought to bear against this scheme. The Lords of the Council opposed it, the reason being that it would interfere with the business of the New River Company. In the year 1634 the Corporation petitioned the Lords of

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[1] Nos. I., II., III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., XV., and XVI. were published in THE LANCET of Feb. 20th and 27th, March 6th, 13th, 20th, and 27th, April 3rd, 17th, and 24th, May 1st, 8th, 15th, 22nd, and 29th, and June 19th and 26th respectively.

[2] Captain Colthurst appears to have claimed the right of making the river. We do not know the exact nature of his claims. The Corporation of London declined to give him leave to do the work, but it seems that his claims had some foundation and that he ultimately received compensation; but no particulars as to the amount are known, and the matter need not be dwelt upon further.

[3] It is not without interest to mention that as a matter of fact the river was almost fatal to James I. on one occasion. He happened to be riding near Theobalds, his favourite country house, with Prince Charles. His horse fell, and he was thrown into the river which was frozen over. He was dragged out by his boots which were alone visible. His Majesty was afterwards pleased to make some remarks with regard to the fencing of the river.

[4] This enterprise was to be carried out by the Chelsea School of Divinity, which had been endowed by James I. The school had received less public support than was expected, and a project was started that the provosts and fellows should enrich the college by forestalling Myddelton's enterprise and supplying London with water on commercial principles.

[5] The King paid half the expenses and was to receive half the profits, but all the management was to remain in the hands of Myddelton, it being specially provided that the King should not interfere in any way with matters of business.

the Council that they might be allowed to bring a water-supply from Roundhead, near Tyburn, into the City. It is stated that the Corporation had spent much money in laying down pipes and that they were then stayed by the King's command, and they therefore asked the Council's leave to petition His Majesty that they might be allowed to finish the work. The desire of the Corporation of London to keep their conduits well supplied with water was a most reasonable and laudable one, and there is no doubt that the only reason which prevented James I. from readily giving his consent was that he did not wish the water business in which he was interested to suffer. The better the supply of water provided by the Corporation the less reason the citizens would have to buy water from the New River.

In carrying out his enterprise Myddelton had very loyal support from the Corporation of the City of London. When in the year 1610, Myddelton asked for an extension of time to carry out the work permission was readily granted. Again, when a Bill was brought in to repeal the New River Acts the Corporation warmly opposed it on the ground that it was for the preservation of the health of the City, and that Myddelton, as the City's deputy, had already expended £3000 on the work. Again in the year 1614 the Corporation granted Myddelton a loan of not less than £3000.[a]

It is not possible here to give a full account of all the changes which have taken place in the New River since it was first constructed to the present day, and we can do no more than briefly describe the original work and mention the alterations which were subsequently made.

Myddelton's general plan in making the conduit was that advantage should be taken of the lie of the land so as to diminish the engineering difficulties to a minimum. The consequence was that the course of the New River from Chadwell to Clerkenwell was very much longer than the direct distance between those places. As a crow flies, the distance from Chadwell to Clerkenwell is about twenty miles. The course of the New River as originally constructed was over thirty-eight miles. It was not possible, however, to conduct the water the whole way simply by digging a course for it. More than one valley had to be crossed. As Stowe said, in some places "it required a sprightful art again to mount it over a valley in a trough between a couple of hills, and the trough all the while borne up by wooden arches some of them fixed under the ground very deep and rising in height above 23 ft." One of these aqueducts was at Bush Hill near Edmonton. Its length was 660 ft., and it was 5 ft. wide and 5 ft. deep. A similar aqueduct was made near Islington. This was 460 ft. long and 17 ft. above ground. It was called the boarded river, and many pictures of it are still in existence. It remained till after the middle of the last century and was removed during the years 1776–78, when an embankment was made to take its place. The Bush Hill aqueduct was similarly replaced by an embankment during the years 1784–85.

The completion of Myddelton's work was very gaily celebrated on Michaelmas Day, 1613, a day on which it happened that his brother Sir Thomas Myddelton was elected Lord Mayor of London for the next term of office. There was a pageant in which sixty labourers carrying their tools took part, the Lord Mayor, Aldermen, and "a worthy company beside" were present, a long speech was given in praise of the work of Myddelton and of the King, and the flood gates were thrown open and the water flowed into the reservoir at Clerkenwell. From this reservoir the water was supplied to the houses through wooden pipes.

In June, 1619, James I. granted a charter of incorporation and Myddelton was appointed the first governor of the newly constituted Corporation. Several attempts were afterwards made to get Parliamentary sanction to the provisions of the charter, but these were not successful.

During the early part of its career the undertaking was not a financial success. The citizens of London resented having to pay for their water. As time went on the supply to the public conduits belonging to the City became more and more inadequate, and the fittings belonging to the Corporation were greatly injured by the fire of 1666. As the customers of the New River Company increased in number it was found that the springs were insufficient to supply the amount of water necessary, and the Company therefore took some from the River Lee, which flowed near their original source of supply. Complaints were made with regard to this, and some lawsuits followed. In the year 1738 an Act of Parliament (12 Geo. II., cap. 32) authorised the Company to take water from the Lee on certain conditions, amongst which were that an annual payment should be made and that the money should be employed for the improvement of the navigation of the Lee. The amount of water to be taken was to be regulated, and a balance-engine and gauge were erected for this purpose. Later, the Company were allowed to use a gauge made of wood, bricks, or stone on condition that the size remained constant. A gauge of marble was afterwards erected. During the early part of its career the New River Company obtained a good deal of water between Chadwell and London. This was chiefly surface water. Of late years, however, the surface water has been carefully excluded, and many channels have been made to intercept it and convey it into the River Lee below the intake of the Company.

The original intake of water from the Lee was near Hertford, but some years later water was also taken at Tottenham and pumped to Newington. This source of supply has, however, been given up. The pumping station will afterwards be described amongst the disused ones. We may here remark that of late years a number of new wells have been sunk in the chalk and that these supply water of a quality greatly differing from that of the Lee at Tottenham.

During the present century great changes have occurred in the demands of the public with regard to the height to which water should be supplied in dwelling houses, and these demands have necessitated great changes in the manner of the distribution of water by the Company. The reservoirs at Clerkenwell are 84½ ft. above the high water level of the Thames, and this height was sufficient to supply the lower stories of houses. About the year 1810 the public generally demanded higher service, and complaints as to the deficiency of pressure became frequent. For the supply of the western part of London a windmill was used for pumping, but this, as an old writer points out, was not always satisfactory "because of the uncertainty and irregularity of its impelling cause." A horse-engine succeeded the windmill and this in its turn was superseded by a steam engine put up by Boulton and Watt in the year 1787. The services rendered by Boulton and Watt with regard to water-supply were considerable, and amongst other things we have to thank them for the approximately accurate knowledge we possess of the amount of water which was supplied from the date at which their engines were first used. When Boulton and Watt put up an engine one of their conditions was that they should "derive a pecuniary advantage from the saving effected by their means in the expense of coal employed for generating the steam." They therefore put up a machine for registering the number of strokes, and it is from these registrations that the first approximately accurate figures are obtained with regard to the amount of water supplied. A register kept from the years 1787–1788 records that during each of these years the amount of water pumped by the New River Company was over 4,500,000 hogsheads yearly. At this time in addition to the steam power a water wheel was used for pumping the water to Islington. In the early part of the century the supply of the New River Company water was given as far westwards as Marylebone, but owing to the severe competition of the West Middlesex and of the Grand Junction Companies the western supply was afterwards discontinued. At one time the New River Company had about 400 miles of wooden pipes through the streets, but in consequence of the public demand for high service, which necessitated increased pressure in the mains, the wooden pipes had to be given up. Iron pipes were put down between the years 1810 and 1820.

Nelson, the historian of Islington, gives some interesting information as to the water-supply of the district in which he was interested. He says that during the latter half of the last century a large part of Islington was not directly supplied by the New River Company. The inhabitants had to buy their water from people who carried it round and sold it at a halfpenny a pail. At the beginning of the present century the inhabitants of Holloway obtained their water from a cart which brought it from the New River, the purveyor obtaining it from a pump at a place called

[a] This money does not appear to have been repaid until the year 1634, after Myddelton's death. The Common Council, when the loan was repaid, remitted no less than £1000 to Myddelton's widow on the ground that losses had been incurred by him through breaches made in the water pipes when they were broken up for putting out fires. But a great many years afterwards also the Corporation of London made grants to Myddelton's descendants. These grants have been made as recently as the present century.

THE NEW RIVER COMPANY.

The part enclosed within the shaded line includes the whole of the area supplied by the New River Company. The course of the New River is shown by a dotted line. The places marked on the map by shaded squares are—

A, Intake from River Lee near Hertford.
B, Chadwell Spring.
C, Broadmead Well and Pumping Station.
D, Amwell End Well.
E, Amwell Hill Well and Pumping Station.
F, Amwell Marsh Well and Pumping Station.
G, Rye Common Well and Pumping Station.
H, Hoddesdon Well and Pumping Station.
I, Broxbourne Well and Pumping Station.
J, Turnford Well and Pumping Station.
K, Cheshunt Well, Reservoirs, and Pumping Station.
L, White Webbs Well.
M, Hoe-lane Well and Pumping Station.
N, Bush Hill Reservoir.
O, Southgate Reservoir.
P, Highfield (Edmonton) Well and Pumping Station.
Q, Bourne Hill Reservoir.
R, Betstile Well and Pumping Station.
S, Hornsey Reservoir, Filter Beds, and Pumping Station; also Campsbourne Well and Pumping Station.
T, Tottenham Pumping Station.
U, Crouch Hill Reservoirs.
V, Stoke Newington: Reservoirs, Filter Beds, and Pumping Stations.
W, New River Head: Reservoir, Filter Beds, and Pumping Station.
X, Claremont-square Reservoir.
Y, Camden Park-road Reservoir.
Z, Hampstead Reservoir.
A A, Highgate Reservoir.
B B, Hornsey-lane Reservoir.
C C, Maiden-lane Reservoir.

Hopping Lane. In the year 1809 a man named George Pocock, who had property at Holloway, dug a well 172ft. deep and put up a steam engine and machinery for pumping to supply the inhabitants of the district with water. The well water was said to be of "the finest quality, extremely soft, and consequently fit for washing and every culinary purpose." Pocock formed a small company, which was incorporated by an Act of Parliament (50 Geo. III.).[7] When the New River Company found that the Bill was likely to pass Nelson says that they put down pipes through Islington "with great expedition for the purpose of supplying Holloway with water which was hitherto withheld, notwithstanding the many applications that had for years been made to them and which the inhabitants were now about to obtain through the exertions of an individual." Nelson goes on to say that the Company pulled up a pump from which the Holloway people had been accustomed to get their water "in order to oblige them if possible to have the Company's pipes laid into their premises." He adds, however, that "the housekeepers in the neighbourhood very properly refused to receive water from the New River, and are now for the most part supplied from the well of Mr. Pocock." Mr. Pocock's adventure, however, proved but a short-lived success and soon succumbed to its older rival. In this respect the fate of the little company was identical with that of many other similar enterprises of which a few words may here be said.

Among the undertakings that were bought at various times by the New River Company may be mentioned the London Bridge Waterworks, the Hampstead Waterworks, the York Buildings Waterworks, the North Middlesex Waterworks, and a private enterprise at Bush Hill Park, near Enfield. It is not necessary to enter fully into a description of these adventures. Some account has already been given of the London Bridge Waterworks, and with reference to this part of the subject, it need only be added that when the New River Company took over the business of the London Bridge Waterworks Company it was provided that they should keep up an engine for the purpose of pumping water from the Thames should it be necessary to supplement the supply from the New River in seasons of drought. For this purpose after the destruction of the works on London Bridge, an engine situated at Broken Wharf[8] was for a time used. The engine was of 100 horse-power, and the water was taken from the Thames at a distance of from 30 ft. to 40 ft. beyond low water level.

The northern part of London was supplied with water by a company of adventurers, who obtained from the Corporation of London some of the water rights which had been conferred upon them by an Act of Parliament passed in the year 1543-44 (35 Hen. VIII., cap. 10). This was the earliest Act of Parliament which bore on the London water-supply. By it the Corporation of London were allowed to obtain water from springs at Hampstead Heath, Marylebone, Hackney, and Muswell Hill. The Act authorised the Corporation to enter private lands and search for springs. They were not to interfere with houses, gardens, orchards, or places enclosed with brick or mud walls; but apart from this restriction they were allowed to make ditches and trenches and to lay pipes, and the servants of the Corporation had power to repair the works necessary to convey the water without interruption from the owners of the property from or through which the water was taken, it being only provided that compensation should be paid for damage actually done. In the year 1692 a company of adventurers took over these powers from the Corporation and afterwards made ponds and reservoirs at Hampstead, which were filled by surface water. For some years during the early part of last century the company supplied water over a considerable area, but as the population increased the sources proved insufficient. As late, however, as the year 1813 water was supplied to parts of Tottenham-court-road. The area of supply which the company nominally possessed was a large one.

The Hampstead Water Company had much trouble with the Hampstead people as to water rights. The ponds are said to have existed in the seventeenth century; the upper pond, however, was smaller than it is at present and covered only three roods. The lower pond had an area of between one and two acres. The Vale of Health Pond was made in 1777. The ponds were fatal, it is said, to many incautious bathers, and there were constant conflicts between the Hampstead people and the water company.

Of the York Buildings Waterworks some account has already been given. The company was finally ruined by the competition of the Chelsea, West Middlesex, and New River Companies, all of which supplied the area in which they were interested. For a time the richer companies reduced their water rates to such an extent that the York Buildings Waterworks were unable to keep their customers. The New River Company then bought up the plant and property of the company.

The water supplied to Bush Hill Park, Edmonton, was put up for the supply of a building estate that was laid out there. A well was sunk, a tower built, and a reservoir made. This business was taken over by the New River Company.

The North Middlesex Waterworks Company carried on business at Betstile, where they sank a well and put up pumping apparatus. This business was taken over by the New River Company.

It would serve no useful purpose to record all the changes which have been made in the course of the New River. The original length of the stream has been considerably shortened and in many places the water is now conducted in pipes, in some the river runs on embankments. The most important improvements which have been made within recent years are that surface water has been as far as possible excluded from the river[9] and that a large number of wells have been sunk to supply the required quantity of water.

GENERAL DESCRIPTION.

The New River Company is the most ancient of all the companies which at present supply London with water. It differs from all the other companies in the fact that it possesses a large quantity of land, and is, as a matter of fact, a land company as well as a water company. With this aspect of the Company this article does not deal, except in so far as the possession of rights affects matters concerning water-supply.

Roughly speaking, the Company supplies the City of London, central London, and the northern suburbs. The area of supply is bounded on the eastern side by the district of the East London Waterworks Company and the district of the Tottenham local board, its southern boundary is the Thames, and on the east the area is bounded by the district supplied by the Chelsea, the Grand Junction, and the West Middlesex Water Companies. The places skirting the northern bank of the Thames are supplied from Charing-cross to the Tower. The most important places supplied are the City of London, Soho, Bloomsbury, Camden Town, Clerkenwell, Hoxton, Kentish Town, Islington, Dalston, Hampstead, Highgate, Holloway, Hornsey, Stoke Newington, Muswell Hill, Betstile, Southgate, and Edmonton.

The water is derived from the River Lee, from Chadwell spring, and from wells at Broadmead, Amwell, Amwell Hill, Amwell Marsh, Rye Common, Hoddesden, Broxbourne, Turnford, Hoe-lane, Highfield, Betstile, and Hornsey, and from ponds at Hampstead and Highgate. The water from the ponds is not used for domestic purposes. The water taken from the River Lee is conducted down an artificial cut, is augmented by that derived from Chadwell Spring and by that pumped from wells situated near the banks of the New River. Of this water, some is filtered at Hornsey and pumped thence into the district around; some passes on to Stoke Newington, where it is allowed to subside in large reservoirs, and is then filtered and pumped to the surrounding district. Some of the water passes on down the New River to New River Head, where it is filtered and pumped to the southern district, including the City of London. Small districts at Betstile and at Amwell Hill are supplied with pure unfiltered well water.

The stations of the Company which are now in working order and which are all marked on the accompanying map are: Intake from the River Lee, near Hertford (A); Chadwell Spring (B); Broadmead, well and pumping station (C); Amwell End, well and pumping station (D); Amwell Hill, well and pumping station (E); Amwell Marsh, well and pumping station (F); Rye Common, well and pumping station (G); Hoddesden, well and pumping station (H); Broxbourne, well and pumping station (I); Turnford, well

[7] An Act for supplying with water Upper and Lower Holloway, Highbury, Canonbury, Upper Islington, and their respective vicinities, all in the parish of St. Mary, Islington, in the county of Middlesex and for other purposes relating thereto.

[8] Broken Wharf was situated between Blackfriars and Southwark bridges.

[9] A former engineer to the Company estimated that at one time something like half the amount of water which fed the river was surface water which flowed into the stream between Chadwell and London.

and pumping station (J); Hoe-lane, well and pumping station (M); Bush Hill, reservoir (N); Southgate, reservoir (O); Highfield (Edmonton), well and pumping station (P); Bourne Hill, reservoir (Q); Betstile, well and pumping station (R); Hornsey, reservoirs, filter beds, and pumping station, and Campsbourne, well and pumping station (S); Crouch Hill, reservoirs (U); Stoke Newington, reservoirs, filter beds, and pumping station (V); New River Head, Islington, reservoir, filter beds, and pumping station (W); Claremont-square, Islington, reservoir (X); Camden Park-road, reservoir (Y); Hampstead, reservoir (Z); Highgate, reservoir (A A); Hornsey-lane, reservoir (B B); and Maiden-lane, reservoir (C C).

In addition to these stations, all of which are now in use, the following two disused stations are marked on the map. Cheshunt, well, reservoirs, and pumping station (dismantled) (K); and Tottenham, pumping station (T).

A new well is being sunk at White Webbs (see L on map). In the succeeding articles the descriptions will be arranged in the following order: 1. Survey of the New River, commencing at the intake from the River Lee. 2. The wells, pumping stations, and reservoirs. 3. The pond water (for non-domestic supply). 4. Area of distribution and general statistics.

(To be continued.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY MEETING of the Council was held on Oct. 14th, Sir WILLIAM MACCORMAC, Bart., the President, being in the chair.

Mr. Victor G. Plarr was introduced and signed the usual declaration on his admission as Librarian.

Mr. C. H. Golding-Bird was admitted a member of the Court of Examiners.

The best thanks of the Council were given to Mrs. Gowlland for her presentation to the College of drawings by the late Mr. P. Y. Gowlland, F.R.C.S. Eng.

It was resolved that the picture of Henry VIII granting the Charter to the Barbers and Surgeons should be restored.

In accordance with the recommendation of the Committee of Management the following institutions were added to the list of recognised places of instruction in chemistry, physics, and practical chemistry: The Staffordshire County Technical Schools; the Devonport Municipal Science, Art, and Technical Schools; the Salford Royal Technical Institute; the Hull Municipal Technical School; the Higher Grade Board School, Norwich; the Bury Technical School; the Southport Victoria Science and Art School; the Maidstone Municipal Technical School; and the East London Technical College, People's Palace.

Mr. Thomas Bryant was re-elected a member of the Committee of Management, and Sir William MacCormac and Mr. Henry Morris were elected members of the Laboratories Committee.

The Laboratories Committee reported that since June 4th the director, Dr. Sims Woodhead, had supplied 9825 doses of antitoxic serum for the treatment of diphtheria in the hospitals of the Metropolitan Asylums Board, each dose contained 2000 units.

Dr. Woodhead also reported the results of a recent visit to Germany in order to compare his methods of preparation of diphtheria antitoxin with those in use in that country.

"On my arrival in Berlin," he wrote, "I went to see Professor Ehrlich, who at once said that he would do everything in his power to help me in obtaining information and making experiments. My first object was to obtain as exact a comparison as possible between our results in serum-testing and those made by Professor Ehrlich and Dr. Dönitz, as the reliability of all our earlier experiments depended essentially on a comparison between two such sets of results. Dr. Dönitz first made a series of experiments, so that I was able to follow exactly the methods of dilution and of administration used at the testing station. At the same time I carried out a series of dilutions according to the methods used in our laboratories. From day to day the reactions obtained in the different animals injected by Dr. Dönitz were carefully examined and noted, and the several experiments were compared. I then obtained from Professor Ehrlich and Dr. Dönitz records of a series of experiments carried out upon the serum sent to Professor Ehrlich from our laboratories. The results obtained were compared with those obtained by us in our earlier experiments; and it appeared that our readings, obtained by the old method, differ to the extent of only about 5 per cent. from those obtained by the new method. Professor Ehrlich then expressed the opinion that the serum he had thus examined for us was equal to any that is in the market. He also informs me that he has tested a number of the other serums examined by us, and that he had obtained results very comparable with ours, and that we could therefore rely upon our figures as being relatively and, within certain limits, actually correct. Professor Ehrlich also stated that, speaking generally, our methods and results were thoroughly reliable. In this he was corroborated by Dr. Dönitz, and later by Dr. Libbertz, of Höchst. They were also greatly interested in the new method of preparing serum, and all of them have determined to try it, as they say that it will be a great improvement if it will work as well as it seems to do here. I have been requested to ask Dr. Wood to send pamphlets to Dr. Libbertz and Dr. Aronsen. Concerning the method of collecting samples of serum, the modes of sealing and controlling, the price of testing the serum, I have obtained all necessary particulars. In every case six samples are taken from large bottles containing several litres. These and the stock flask are then placed under seal, and are sent to the laboratory. One of these samples is examined immediately; the others are put aside for future reference. The samples are tested, first, as to the presence or absence of micro-organisms; secondly, for the quantity of preservative material that has been added; and thirdly, for the number of units in each c.c. of the sample. These tests are always made in duplicate. When these duplicate experiments do not accord, a final determining experiment is made. If the strength of the serum does not come up to the required standard, it is simply returned as being below what is claimed. A fixed fee is taken for every fresh testing of these returned samples. The new method of testing the serum with large quantities of toxin is that now always used, as it is sufficiently delicate to measure to within 1 per cent. Professor Ehrlich maintains, however, that the old method in capable hands also gives exceedingly good results, probably to within from 5 to 10 per cent. He recommends, however, in all cases that an allowance for such proportion of error and for fall in the antitoxin strength of the serum should always be made."

The Chairman of the Annual Report Committee presented a draft copy of the report to be presented to the Fellows and Members at the annual meeting to be held on Nov. 18th, 1897, at 3 P.M.; it was approved.

Mr. R. J. Godlee was elected a member of the Court of Examiners' section of the Board of Examiners in Dental Surgery in the vacancy occasioned by the retirement of Sir William MacCormac.

A vote of thanks was given to the President and Mr. Jessop for representing the College at the Moscow Congress.

The President reported that he had accepted on behalf of the Council a portrait of Frère Jaques, presented to the College by Mr. Sharon Grote Turner, to whom the best thanks of the Council were accorded.

A letter was read from the Parliamentary Bills Committee of the British Medical Association expressing the hope that the President, with one or more members of the Council, would join a deputation to the Secretary for War on the subject of the Army Medical Service, and enclosing copies of a report of a sub-committee on the question of advancing army medical reform. The matter was postponed to the next meeting, but copies of the report mentioned were ordered to be sent to each member of the Council.

A memorial was read signed by medical practitioners resident in Great Yarmouth, calling attention to certain facts in connexion with medical aid associations and submitting the following questions for the consideration of the Council—viz.:

(*a*) Is the holding of appointments such as are herein described compatible with the conditions under which your diploma is granted and held?

(*b*) If the holding of such appointments by your diplomates does not contravene the existing regulations does not your Council consider that, in the interests of the medical profession and of the public, by-laws forbidding such practice should be adopted?

(*c*) Is not your Council of opinion that for a medical man to hold such appointments should be declared by the General Medical Council to be conduct infamous in a professional respect; and, if so, will your Council instruct its representative on the General Medical Council to support such a declaration?

The following reply was directed to be sent:—

"That the memorialists be informed that there is no provision in the Charters or By-laws of the College prohibiting Fellows and Members of the College from acting as medical officers to medical aid associations, but that the Council, while not prepared to express an abstract opinion on the questions raised, are willing to consider any evidence which may be submitted to them respecting canvassing for patients, either directly or indirectly, by any individual Fellow or Member of the College, with a view to determining whether or not such Fellow or Member has been guilty of a breach of the By-laws."

BORACIC ACID IN BUTTER.—At Barry Police-court on Oct. 11th a local tradesman was fined twenty shillings and costs for selling butter which contained an excessive quantity of boracic acid. The public analyst certified that the butter contained 9 per cent. of boracic acid. Dr. Williams said he considered the amount of boracic acid to be four times the quantity required to preserve butter when no salt was used. The butter, he added, contained 60 grains to the pound, and this would be highly injurious if taken for any length of time.

THE ELECTION OF A DIRECT REPRESENTATIVE.

As we were able to announce last week, Mr. Victor Horsley has proved the successful candidate for the vacancy caused by the resignation of Dr. Rentoul of his seat as a Direct Representative of the profession for England and Wales. The Branch Council certified on Saturday last the result of the election, and the exact number of votes polled by each candidate proves to have been as follows:

MR VICTOR HORSLEY	6946
SIR WALTER FOSTER	6112
DR. RIGBY	197
DR. DIVER	81

Mr. Horsley was thus elected by a majority of 834 votes over Sir Walter Foster.

The number of voting-papers sent out was 22 576 (the additions to, and removals from, the Register having so counterbalanced each other as to bring the total within one of the number sent out in 1896). Of these, 13 466 (or 59·64 per cent.) were returned by the voters within the proper time according to the regulations; 227 (or 1 01 per cent.) were returned by the voters, but received at too late a date to be lawfully reckoned in the enumeration; 822 (or 3 64 per cent) were returned through the Dead Letter Office; and 8061 (or 35 71 per cent.) did not come back in any way—total, 22 576

The percentage of voters on the present occasion was 5·42 greater than in 1896—59 64 per cent. in 1897, as against 54 2 per cent. in 1896.

Of the 13 466 voting papers duly returned, 130 (or 0 9 per cent) were invalid owing to the following various causes: 4 were entirely blank; 11 were signed, but not marked; 82 had no signatures; 28 were improperly marked: 3 practitioners to whom voting papers were sent were stated to be dead; and 2 voters were stated to have gone to the colonies—total, 130.

It may be noticed in this connexion that, although there was but one member to be elected, in two cases the voters selected two candidates, and in two other cases voted for three candidates.

We have been requested to publish the following letters of thanks from Mr. Victor Horsley, Sir Walter Foster, and Dr. Diver:—

To the Registered Medical Practitioners of England and Wales.

LADIES AND GENTLEMEN,—I beg to thank you sincerely for the honour you have conferred upon me by electing me as one of your Direct Representatives on the General Medical Council.

In the confidence thus extended to me I fully recognise that you have desired to give expression to your approval of the reforms initiated, and already in part effected, by the Medical Defence Union and your wish to see them extended and furthered by the same methods. If it should prove that I am able to carry out your wishes in this respect any success achieved will be due to the council and members of that union, as it is to their support, assistance, and teaching that I owe the training for the work you have decided to place in my hands.

There is one point more upon which I would like to say a few words. Under the Medical Acts as they now stand Dr. Rentoul's resignation would entail upon the profession a series of double elections. The costliness and inconvenience of this arrangement are obvious. To restore as far as lies in my power the normal condition of affairs I shall resign my office when the term of the Representatives elected in 1896 expires—i.e., after I shall have served for four years instead of for the full period of five years for which you have elected me. Again thanking you,

I am, yours faithfully,

VICTOR HORSLEY.

To the Registered Medical Practitioners of England and Wales.

LADIES AND GENTLEMEN,—I beg to return my most heartfelt thanks to the 6112 registered medical practitioners who, with only a few days' notice of my candidature, voted for me in the recent election. When I consider that many of my friends were unable to assist me on account of pledges given before my candidature was announced, I feel very grateful for this remarkable expression of confidence on the part of so large a number of my profession.

I am, your obedient servant,

Birmingham, Oct. 18th, 1897. B. WALTER FOSTER.

To the General Practitioners of England and Wales.

LADIES AND GENTLEMEN,—It is with a full—indeed, a keen—appreciation of the firm adherence to my cause of many of my professional friends that I address myself to you with earnest thanks at the close of this election, wherein I appear in the last place. For it must have been apparent to you who voted for me, so soon as the two rivals—Mr. Victor Horsley and Sir Walter Foster—came upon the field with their powerful organisations and the glamour of their names, that they would attract nearly all the interest of the election, and would swiftly draw such a following that the rush would detach a large number of adherents from the other candidates, and sweep their voting papers into the scumper with the rest. That this was so was exemplified upon a large scale by what happened in the grouping about Mr. Jackson. There the mass was disintegrated with the assent of its central figure, who hailed his constituents to gather with him in the wake of the particular rival he selected.

But the polling being over, what is its practical outcome? A man of capacity has been chosen, but from whence? From the ranks of the consulting men of London; and thus our distinctive representation, the increase of which we are earnestly demanding, has been reduced from five to four. That Mr. Horsley has much information of the needs of the medical practitioner is notorious, and that he will work honestly goes without saying. But mark! It is information alone which he possesses, not experience. In his London meeting he admitted that no one in the Council had done more for the profession than Dr. James Glover, and we all know that Dr. Jas. Glover is a general practitioner of long standing and experience; and Mr. Horsley had before said in his brief, that there were two gentlemen of our body, friends of his own, who are worthy of the office he himself was seeking, and if either of these would stand, he would not. Otherwise, he would compete in the interests of us all. Ingenuousness does truly mark our earlier days!

Well, the electorate have taken Mr. Horsley at his own estimate and have opened wide the portals for his entry, whilst thoughtful men have looked on with wonder and concern. But when the dust of contest shall have settled upon the field, and the sunlight and fresh air of truth and common sense shall make our vision and our retrospect clear, we shall perceive that the profession has uttered to itself a stern rebuke and has, in the darkness, made a lash for application to its own body, and at the same time has given to the ill-natured critic of our profession a chance to smile and say, "It serves you right."

Adieu for this time, and with thanks once more heartily felt and respectfully tendered,

I am, your faithful servant,

Devonshire-street, Portland-place, Oct. 20th, 1897. E. DIVER.

THE ASSOCIATION OF CORPORATE AND MEDICAL REFORM AND THE DIRECT REPRESENTATIVES.

WE have received the following letters with a request for their publication:—

11, Adam-street, Strand, W.C., Oct. 16th, 1897.

SIR,—We are requested to represent that its next meeting being on Tuesday, Oct. 19th, our committee will feel obliged by the favour of a reply to the letter addressed to you covering a series of questions submitted to candidates at the recent election to a vacancy in the General Medical Council. Until the movement for medical reform is taken up by his own constituency it is, we feel sure, unnecessary to explain that there can be no suggestion of a claim to a reply from the Direct Representative for Scotland, and his opinion is invited solely because, as has before happened in the

history of both countries, lovers of freedom and justice in our country may well hope to receive both sympathy and help from his; and we feel every confidence that a request arising from a spirit of courtesy and deference will be met in the same spirit.

Our committee can have no doubt of the will of all the Direct Representatives to act in harmony with the aspirations of their constituencies, yet in the adoption of a course of policy intended to extend to an appeal to Parliament and the nation, an expression of their views in order to enable all appearance of disunion to be avoided would afford valued assistance in deciding upon the most proper measures.

We have, &c.,

(Signed) W. G. DICKINSON,
R. B. ANDERSON,
Hon. Secretaries of the Corporate and Medical Reform Committee.

To Dr. J. Grey Glover and Dr. William Bruce.

25, Highbury-place, N., Oct. 18th, 1897.

DEAR MR SMITH,—I hope you will forgive me for not sooner replying to a letter from a body calling itself the Executive Committee of Corporate and Medical Reform, of which you are the chairman, in which letter are enclosed some thirty or forty questions with a request that I should give a reply to each of them.

I hope you will not think me guilty of any personal discourtesy if I ask you to excuse me complying with this request. Such elaborate heckling is bad enough during an election, and from gentlemen in whom one recognises some authority to speak for the profession or for a considerable section of it. The present is not such an occasion. In spite of the opposition of most of the gentlemen whose names I see in your circular, I am by the favour of the profession—not your delegate as you seem to think—but its representative now for the third time. I claim to be treated with some trust and not cross-examined like an uncertain witness by gentlemen who have constituted themselves, very superfluously as I think, into a new association. I do not think it in the interest of the profession that any half-dozen gentlemen can meet in any small room and dub themselves a new association. Surely we have enough associations already. In a paragraph in the *Times* of Oct. 12th, having clear internal evidence of being supplied by your executive committee (in course of formation), mention is made of the Association of Fellows of the College (Royal College of Surgeons of England?), the Society of Members of the College, the Incorporated Medical Practitioners' Association, the London and Counties Medical Protection Society, the Medical Defence Union, and various other societies and the British Medical Association.

What can be the excuse for another medical association and what its function? The answer is to be gathered from the same paragraph. It is to push them all on and energise them—to be a sort of goad or *vis a tergo*. The modesty of this function, self assumed by a few gentlemen who are by no means silent members of the other associations, strikes me, as does their happy belief that this last grand new association is necessary to move the greater associations into use and activity. These associations are doing their best. Two or three of them would do all the profession needs if they were loyally supported and not distracted by little competitive bodies whose vanity seems to be in the inverse ratio of their age and numbers. I must, therefore, respectfully decline to recognise the need of your association or its right to question men elected and trusted by the profession of England and Wales as members of the Medical Council.

But my chief reason for declining to answer your numerous questions, which remind me of a celebrated long programme which brought its authors to grief, has yet to be stated. It is not that I do not sympathise much with some of your chief objects, but that I lack confidence in your judgment, in your impartiality, and that I disapprove of the methods by which you propose to realise your objects. You propose to memorialise the Medical Council—a perfectly legitimate procedure. But you intimate in the *Times* an intention, in the event of your appeal to the Medical Council being unsuccessful, of petitioning Parliament and being heard at the Bar of both Houses. I seem to detect in this proposal a development of a threat made by one of my colleagues in a celebrated speech of "shaking the Medical Council to its centre," and, this failing, of "going to Parliament." Whether your committee could claim the privilege of appearing at the Bar is perhaps open to question. But the proposal seems to me dramatic and ridiculous. Were I to join you in attempting to carry it out we should not only make ourselves appear ridiculous—which might be a small matter—but we might bring Direct Representation itself, and even the great profession of which we are all proud to be members, into discredit. It is not thus that the many grievances of medical practitioners are to be redressed or the constitution of the Medical Council is to be improved. I must therefore ask to be severely and entirely disassociated from the authors of such a proposal.

I am, Sir, your obedient servant,

JAMES GREY GLOVER.

To Joseph Smith, Esq., M.R.C.S. Eng., &c., Chairman of the Corporate and Medical Reform Committee.

[COPY.]

The Castle, Dingwall, N.B., Oct. 17th, 1897.

DEAR SIRS,—I have to thank your committee for the compliment they have paid me in addressing me on the subject of their memorial and in doing me the honour to ask me to to sign it. I trust they will not suppose for one moment that I do not sympathise with the feelings which prompted them to issue and to ask for support for their memorial, when, after full consideration, I refuse to adhibit my name to the document. If the committee carry out their intention of presenting it to the next meeting of the General Medical Council I shall frankly and freely express my views, which I hope will be such (as far as they go) as to merit the committee's approval. It humbly seems to me an expression of opinion at this time would be both premature and, let me add, in my personal and unadvised judgment, somewhat discourteous to my colleagues of the General Medical Council. Please excuse haste, as I must write now to catch the post so as this may reach you on Tuesday, and believe me to be,

Yours truly,

(Signed) WILLIAM BRUCE.

To Messrs. Dickinson and Anderson, London, Hon. Secretaries of the Corporate and Medical Reform Committee.

THE EXTENSIONS AT THE BATHS OF BATH.

IT is needless in a medical journal to say anything about the virtues of the Bath waters, but it is perhaps necessary to remark that these virtues are not appreciated by the public as they should be. The corporation of that city in whose hands the control and care of the baths are vested have of late years pursued the wise policy of improving the accommodation and the appliances in every possible way, and the latest addition, a magnificent concert-room and promenade around the old Roman bath, was opened to the public on Oct. 18th by H.R.H. the Duke of Cambridge. The day chosen, St. Luke's Day, doubtless on account of the association of that saint with the medical profession, was unfortunate in one way in that it clashed with the Harveian Oration and the meeting of the Royal College of Physicians of London, by which many metropolitan medical men were prevented from accepting the hospitality so kindly offered by the corporation and the medical men of Bath. The proceedings were eminently successful in every way. To begin with the weather was perfect and the beautiful city was looking its best. His Royal Highness on arriving first received the Freedom of the City and afterwards laid the foundation-stone of the new Art Gallery. On the conclusion of this ceremony he was conducted to the building forming the additions to the Pump Room. The promenade or concert-room is a well-proportioned chamber, some 80 ft. long by 40 ft. wide, mainly in the classical style, with Renaissance decoration. At right angles to this runs the old Roman bath which has been lately uncovered; the water is open to the sky at present, though formerly it was roofed in, and the walls and pillars supporting this roof are still to be seen running round the central bath for about the height of four or five feet. Under the present scheme the bath has been treated as the impluvium in the atrium of an ancient Roman house. The external walls are carried up from the ancient walls to form the court, and plain Doric pillars support the flat roofs over the ambulatories at the sides and ends. On the east, south, and west sides are statues of eight of the Roman generals and emperors who had to do with the conquest and occupation of Britain. These are the work of Mr. G. A. Lawson, whilst the architect of the surroundings of the bath is Mr. J. M. Brydon, who

also designed the concert-room. The Duke of Cambridge having taken his seat, Mr. R. H. Moore, the chairman of the Baths Committee, gave a short but most interesting account of the baths and the various improvements and means for utilising the waters which have been carried out from time to time. That these additions were worth carrying out from a purely commercial point of view was shown by the fact that since they had been in use the income to the city from the baths had increased from £2000 per annum to over £6000. Though the Corporation of Bath naturally rejoiced over this it was not simple selfishness, for the increased and increasing use of the baths meant relief from pain and suffering for many hundreds of invalids. His Royal Highness then, after a short speech of congratulation, declared the additional buildings open. After this the mayor, Mr. C. Woodiwiss, entertained some 250 guests to luncheon in the Guildhall. Among the medical men present were Dr. Allchin, Mr. Lennox Browne, Dr. Cholmeley, Dr. Coupland, Dr. Curnow, Dr. John Harley, Mr. Reginald Harrison, Dr. Hensley, Mr. Cripps Lawrence, Mr. Macnamara, Dr. B. H. Rogers, Mr. Quarry Silcock, and Dr. James Taylor. Mr. Victor Horsley, who had been invited, was unfortunately prevented from being present.

After luncheon the medical visitors were given a private demonstration of the various methods of bathing employed and the different kinds of baths in use. All these were described and explained by Mr. Henry Freeman, F.R.C.S. Irel. A reception and tea were also held at the Royal United Hospital. In the evening the medical profession of Bath and the neighbourhood entertained their professional brethren at dinner. Altogether some forty sat down, Dr. L. A. Weatherley being in the chair. The dinner went off very well and reflected great credit on the indefatigable secretary of the Medical Reception Committee, Mr. W. M. Beaumont. The chairman proposed the health of the guests, which was responded to by Dr. John Harley.

After dinner the company proceeded to the reception given by his Worship the Mayor in the new concert-room. The old Roman bath was illuminated in good taste, the lamps being small and subdued and therefore not productive of any jarring effects, and the whole scene was one of great beauty. Bath, we think, may well be proud of the way in which the various entertainments were carried out, and her guests have every reason to be grateful. Mr. T. Sturge Cotterell, on behalf of the corporation, has spared no pains to impress upon the world at large the beauties and benefits which the city of crescents offers to all alike, while as more particularly concerning ourselves the Medical Reception Committee, through Mr. W. M. Beaumont and Dr. Bannatyne, were untiring in their efforts to show everything that could be seen and to extend an almost overwhelming hospitality. The corporation has intimated its intention of carrying out still further improvements, so that we do not feel ungrateful in suggesting one. Bath is pre-eminently the city in Great Britain which needs, and could support, a casino—we mean a place where the resident or visitor could just stroll in on paying sixpence or so and enjoy a cup of coffee, and listen to a good string band. Perhaps the new concert-room will be sometimes utilised in this way, but we fancy it would be better to have an additional building. It need not be more than a kind of large conservatory, but it must be properly managed, and the fault avoided which spoils so many places in London of ordering people about. This sin is especially in evidence at that notable failure from an entertainment point of view, the Imperial Institute, where the visitor is told he may not do this or that and may not go here or there, and when at length, after many trials, he does arrive at the "gardens," what does he find? An asphalte paved court, surrounded by brick walls, looking more like a prison exercising ground than anything else. We have sore need in this country of more opportunities of simple and cheap relaxation, and Bath is one of the places to show how they can be brought about.

THE SICKNESS AND PLAGUE IN INDIA.

THERE is an unusual amount of sickness and mortality in certain parts in India at the present time, and notably in the city of Bombay and in several of the towns and rural districts of that Presidency. According to the latest papers the mortality in Bombay at the present time stands at the very high rate of 52·83 per 1000. The epidemic of plague has not by any means ceased; on the contrary, it still prevails to some extent in Bombay, and even more so at Poona and Kirkee, and it seems to be slowly but surely creeping along rural districts and villages. According to telegraphic intelligence through Reuter's agency, of the 19th inst. an outbreak of what is believed to be plague has occurred in a village in the Jullundur district of the Punjab. Twenty-three deaths have been reported, and it is believed that the infection has been conveyed to the village from Hurdwar, which is situated on the Ganges, in the Saharunpur district. The situation altogether is not so satisfactory as could be desired and probably gives rise to some anxious consideration on the part of the authorities in India and this country. The prevalence of the disease, too, tends to increase during the winter. An elaborate scheme has been formulated for the sanitary improvement of Bombay which will cost a good deal to carry out, but no reasonable amount of outlay will prove so costly as the continuance of plague and other epidemic diseases.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6345 births and 3566 deaths were registered during the week ending Oct. 16th. The annual rate of mortality in these towns, which had declined in the nine preceding weeks from 29·5 to 16·2 per 1000, rose again last week to 16·9. In London the rate was 16·1 per 1000, while it averaged 17·5 in the thirty-two provincial towns. The lowest rates in these towns were 9·2 in Cardiff, 9·9 in Swansea, 10·9 in Halifax, and 11·6 in Croydon; the highest rates were 21·5 in Bolton, 22·4 in Liverpool, 23·6 in Preston, and 23·7 in Birmingham. The 3566 deaths included 415 which were referred to the principal zymotic diseases, against 514 and 434 in the two preceding weeks; of these, 127 resulted from diarrhœa, 89 from measles, 73 from diphtheria, 51 from "fever" (principally enteric), 39 from whooping-cough, and 36 from scarlet fever. No death from any of these diseases was recorded last week in Brighton; in the other towns they caused the lowest zymotic death-rates in Bradford, Croydon, Swansea, and Oldham; and the highest rates in Birmingham, Sheffield, Burnley, and Preston. The greatest mortality from measles occurred in Birmingham, Manchester, and Burnley; from whooping-cough in Derby; from "fever" in Gateshead; and from diarrhœa in Salford, Blackburn, Preston, and Sunderland. The mortality from scarlet fever showed no marked excess in any of the large towns. The 73 deaths from diphtheria included 45 in London, 4 in Liverpool, 3 in Plymouth, and 3 in Leicester. No fatal case of small-pox was registered last week either in London or in any other of the thirty-three large towns; and no small-pox patients were under treatment in any of the Metropolitan Asylum Hospitals. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of the week was 3725, against 3697, 3677, and 3692 on the three preceding Saturdays; 440 new cases were admitted during the week, against 358, 349, and 400 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 167 and 176 in the two preceding weeks, further rose last week to 268, and were 15 above the corrected average. The causes of 40, or 1·1 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, Leicester, Leeds, Hull, Newcastle-upon-Tyne, and in eighteen other smaller towns; the largest proportions of uncertified deaths were registered in West Ham, Nottingham, Preston, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had increased in the three preceding weeks from 17·8 to 19·8 per 1000, declined again to 19·1 during the week ending Oct. 16th, but exceeded by 2·2 per 1000 the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from

12·8 in Aberdeen and 13·3 in Paisley to 21·7 in Edinburgh and 23·7 in Greenock. The 563 deaths in these towns included 29 which were referred to diarrhœa, 20 to whooping-cough, 17 to scarlet fever, 6 to measles, 6 to diphtheria, and 6 to "fever." In all, 84 deaths resulted from these principal zymotic diseases, against 78 and 73 in the two preceding weeks. These 84 deaths were equal to an annual rate of 2·8 per 1000, which was 0·8 above the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of whooping-cough, which had declined from 20 to 12 in the three preceding weeks, rose again to 20 last week, of which 13 occurred in Glasgow and 3 in Leith. The deaths referred to scarlet fever, which had been 5 and 13 in the two preceding weeks, further rose to 17 last week, of which 7 were registered in Edinburgh, 4 in Glasgow, and 4 in Paisley. The 6 fatal cases of diphtheria also showed a further increase upon the numbers recorded in recent weeks, and included 3 in Glasgow and 2 in Edinburgh. The deaths referred to different forms of "fever," which had been 7 and 12 in the two preceding weeks, declined to 6 last week, of which 3 occurred in Edinburgh and 2 in Paisley. Of the 6 fatal cases of measles 5 were recorded in Glasgow. The deaths from diseases of the respiratory organs in these towns, which had been 137 and 162 in the two preceding weeks, declined last week to 122, but exceeded by 35 the number in the corresponding period of last year. The causes of 34, or nearly 6 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had declined in the three preceding weeks from 28·3 to 21·9 per 1000, rose again to 24·0 during the week ending Oct. 16th. During the thirteen weeks of last quarter the rate of mortality in the city averaged 24·0 per 1000, the rate during the same period being 19·4 in London and 18·4 in Edinburgh. The 161 deaths registered in Dublin during the week under notice showed an increase of 14 upon the number in the preceding week, and included 14 which were referred to the principal zymotic diseases, against 20 and 17 in the two preceding weeks; of these, 7 resulted from "fever," 3 from diarrhœa, 2 from diphtheria, 1 from scarlet fever, and 1 from whooping-cough. These 14 deaths were equal to an annual rate of 2·1 per 1000, the zymotic death-rate during the same period being 2·0 in London and 2·8 in Edinburgh. The deaths referred to different forms of "fever," which had declined from 9 to 4 in the three preceding weeks, rose again to 7 last week. The 3 fatal cases of diarrhœa showed a marked decline from the numbers recorded in recent weeks. The mortality from scarlet fever also showed a decline, while that from diphtheria and from whooping-cough showed an increase. The 161 deaths in Dublin last week included 27 of infants under one year of age and 36 of persons aged upwards of sixty years; the deaths both of infants and of elderly persons showed a further decline from those recorded in recent weeks. Six inquest cases and 6 deaths from violence were registered; and 56, or more than a third, of the deaths occurred in public institutions.

THE SERVICES.

ARMY MEDICAL STAFF.

SURGEON-MAJOR CROFTS is appointed for service in West Africa. Surgeon-Major Reade and Surgeon-Lieutenant Bowen have joined at Woolwich for duty. Surgeon-Lieutenant Brodribb is posted to the Station Hospital, Western Heights, Dover. Surgeon-Captain Wright has embarked for Malta. Surgeon-Lieutenant W. A. Ward embarked on the 22nd inst. at Tilbury in s.s. *Arcadia* for Bombay.

INDIA AND THE INDIAN MEDICAL SERVICES.

The services of the under-mentioned officers are replaced at the disposal of the Military Department:—Surgeon-Lieutenant Hooton (Bombay) and Surgeon-Lieutenant Standage (Bombay). Brigade-Surgeon-Lieutenant-Colonel Blood, A.M.S., to officiate on the Administrative Medical Staff of the Army, with the temporary rank of Surgeon-Colonel, vice Surgeon-Colonel E. Townsend, A.M.S., appointed Principal Medical Officer, Mohmand Field Force.

The under-mentioned medical officers of the A.M.S. have been detailed for duty with the 24th British Field Hospital, in place of Surgeon-Major Yourdi and Surgeon-Major Berryman, whose tour of service has expired: Surgeon-Major Woodhouse and Surgeon-Major Henderson.

VOLUNTEER CORPS.

Rifle: 12th Middlesex (Civil Service): Surgeon-Lieutenant E. M. Callender to be Surgeon-Captain.

THE WEIGHT OF CANDIDATES FOR COMMISSIONS IN THE ARMY.

Attention has been called to the orders regulating the height and weight of candidates for admission to Sandhurst and Woolwich and for army commissions. In the enlistment of recruits for the army, where the age of the recruit often cannot be accurately known, it was naturally found desirable that some rules and scales, deduced from a large and extended series of examinations and observations, should be laid down for general and medical guidance regarding height, weight, and chest measurement in relation to age. A large amount of statistical and other data exists, and the late Sir William Aitken embodied the results of these in his work on the growth of the recruit and young soldier. The outcome of all this analytical labour was to determine, approximately at any rate, what is or should be, the condition of the human frame in these respects at certain ages of life, and which was expressed by the term "physical equivalents." There cannot be any doubt that men of good build and of good physical strength and health are required for army life. But it is a matter of common observation that men of light weight are frequently very enduring, active, and energetic, both physically and mentally, and will, in the parlance of the day, "walk round" the heavier and altogether bigger samples of humanity in many field sports and exercises. Still, these favourable samples of light weights cannot, after all, be said to be the rule, and it is next to impossible to fix on a working formula or average that will satisfy all. It is contended that the scale of weight laid down and required for young officers for the army is too high, and that it would have excluded some of our most distinguished officers; that many athletes are the reverse of fat and that light weights frequently possess superior powers of endurance—"staying power," as it is called; and there is no doubt a good deal of truth in these statements. It is well known that, owing probably to differences in diet, hygienic care, and outdoor games, the youth of the well-favoured non-labouring classes compare favourably with the artisan or labouring class of the English population in size, weight, and stature. It is often difficult to determine from the physical examination of a youth what he will become later in life. We suspect that many boys of sixteen years of age, 5 ft. 4 in. in height, do not weigh 8 st. 8 lb., although at twenty-one or twenty-two years of age they may develop into fine, active young men in every way well fitted for military officers. But the age of sixteen years does not count in the case of candidates for Sandhurst and Woolwich, for they are rarely so young and commonly of about eighteen years of age when they go up for the examination. If the figures in the regulations be compared with the averages in anthropometrical tables they will, we think, be found to have been fairly fixed. On the other hand, it is an exaggeration to represent that the regulations as to weight in correlation with height and chest measurement required by the army authorities mean fat young men. The young officers of our army, as seen at any military club, strike us as a fine body of well-grown young fellows and they are certainly not fat. What seems to us a legitimate source of complaint is the existence of any rigid rule at all about matters which should be mainly left to the judgment of the examining medical officers. Scales and formulæ should be used as guiding indications rather than as absolute rules for invariable application.

IMMEDIATE LAPAROTOMY IN WOUNDS OF THE ABDOMEN.

A paper on this subject by a French military surgeon named Caillet was read by M. Chauvel at a recent meeting of the Académie de Médecine, the author having based his remarks mainly on two cases which were related in detail. In the first a non-commissioned officer received a revolver shot point blank in the lower part of his abdomen, and an hour later was taken to hospital. The officer on duty dressed

the wound with iodoform and applied a bladder containing ice. The following morning when Dr. Caillet saw the patient, six hours after the injury was inflicted, he was in a good condition, the temperature was 98·8° F. and the pulse was 80; there was no vomiting, hiccough, or dyspnœa. By four o'clock in the afternoon, however, unfavourable symptoms had set in, and at 7.30 operative interference was decided on. Median laparotomy disclosed four perforations of the small intestines, and the cavity of the peritoneum contained some doubtful-looking fluid, with particles of food and false membrane. Recovery, which was delayed by an attack of pneumonia, took place in about six weeks, the missile coming away in a stool on the ninth day. In the second case a dragoon was stabbed in the left iliac region and immediately vomited some coffee he had just taken. Four hours later he was admitted to the Vincennes Hospital, his general condition being then satisfactory. There was no nausea and his pulse beat firmly at 70. An attempt was made to probe the wound, but the stylet could not be introduced. As perforation seemed uncertain an expectant treatment was adopted, and the next morning the patient was so well that he was allowed several spoonfuls of milk. A few hours after this a complete change took place and urgent signs of generalised peritonitis showed themselves. Median laparotomy was at once performed, but the patient was so weak that only the small intestine could be examined, the result being negative. The abdomen was then closed, after the cavity had been washed out with warm artificial serum. Shortly afterwards the man died, and at the post-mortem examination it was found that the large intestine had been pierced. The author believes that if preventive laparotomy had been essayed both patients would have been saved. There is no intrinsic danger in laparotomy nowadays, he says. Then why delay it even in the most doubtful cases? In the instances cited the impossibility of sounding the wounds contributed largely to the postponement of the operation; but considering the small-sized projectiles now in vogue this method of establishing a diagnosis should not be accorded too much weight, especially when anæsthesia has not been employed. Exploration is, no doubt, of great value where practicable, but inability to effect it is no proof of the absence of perforation. Statistics may be unfavourable to immediate laparotomy in penetrating wounds of the abdomen, but the author, nevertheless, maintains that it is generally indicated; and in this opinion he apparently has the support of M. Chauvel.

CHOLERA IN INDIA.

The news from the headquarter half of the 1st Battalion of the Shropshire Regiment stationed at Sitapur, not far from Lucknow, North-west India, shows that a severe outbreak of cholera has occurred. It is reported that forty non-commissioned officers and men have died from cholera. It is too early to learn any details, but assuming the outbreak to have been a very sudden one it looks like water poisoning; but if that be so, how did it occur on such a scale? Sitapur is, generally speaking, a healthy station, and how did the *comma bacillus* gain an introduction into the affected community?

THE SICKNESS AMONG THE TROOPS IN THE TOCHI VALLEY.

We are glad to hear from the last file of Anglo-Indian papers up to the 2nd inst. that the health of the Rifle Brigade is somewhat improving. They had lost up to date one officer and forty-four men. The valley at this time of year is unhealthy, and a good deal of sickness, mainly of malarious origin, prevails. The temperature during the day has been great—99° F. at Saidgi in a double fly tent; but it will soon, or already has, become cooler.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—The autumn meeting of the South Western Division of this association will be held at Brislington House, near Bristol, on Oct. 26th at 2.45 P.M. Dr. Goodall will communicate a paper on the Systematic Collection of Anthropometrical Data in Asylums; Dr. Morton will read notes of a case and open a discussion on the Making of Wills by Certified Patients, and the Duties of Medical Men in Regard to This; Dr. Blachford will read notes on the Order of Disappearance of Rigor Mortis from the Body as observed at Autopsies on the Insane; and Dr. Briscoe will report a case of Fracture of the Fibula in a Melancholic, with Remarks on Fracture in Insane People.

Correspondence.

"Audi alteram partem."

THE JENNER SOCIETY AND VACCINATION.

To the Editors of THE LANCET.

SIRS,—It is thought desirable to put on record in an unquestionable form the opinion of medical officers of health as to the relative merits of vaccination and "sanitation" as preventives of small-pox. Such an expression of opinion will, it is conceived, be the most effective answer to the views to which the statement of the two dissentient members of the late Royal Commission on Vaccination has given so much currency, that "sanitation" can be safely relied on, not as an adjunct to, but in the place of, vaccination, notwithstanding the opinion of the rest of their colleagues to the contrary.

The following declaration, whilst affirming the report of the late Royal Commission, that "sanitation cannot be relied on as a substitute for vaccination, also confirms two other conclusions contained in the report—that vaccination, especially by the use of calf lymph, is free from any serious danger, and that to perpetuate the protection against small-pox afforded by vaccination in infancy it is expedient to repeat the operation at a later age. It has already been signed by upwards of 850 medical officers of health in Great Britain, India, and the colonies. The signatures of those who have no pecuniary interest of any kind in vaccination, nearly 250 of the above number, include those of officers to a number of English, Welsh, and Scotch counties, the metropolitan and many combined provincial districts, and nearly all the large cities and towns. It is still in process of signature, and will, it is believed, be endorsed by medical officers of health in all parts of the world.

I am, Sirs, yours faithfully,

FRANCIS T. BOND, M.D.,
Honorary Secretary of the Jenner Society.

Gloucester, Oct. 7th, 1897.

Declaration.

We, the undersigned, actually or recently medical officers of health, think it right, in view of assertions which have been published, with some appearance of authority, as to the efficacy of "sanitation" as a substitute for vaccination in dealing with small-pox, to make the following statement:—

1. As responsible sanitary officials, to whom the care of the health and lives of the community is especially entrusted, we have every inducement to give due weight to the value of "sanitation" in the widest sense of the term for the prevention of small-pox as of other forms of infectious disease. We include in that term good drainage, the removal of refuse, the supply of pure air and water, and all other conditions which are calculated to fortify the body against disease in general.

2. We are no less alive to the importance of those special precautionary measures which experience has shown to be so valuable, when effectively used, to arrest the spread of infectious disease, such as the immediate notification of illness, the efficient isolation of the sick and of those who have been exposed to infection, and thorough disinfection of persons and things.

3. While thus fully appreciating the value of these agencies for such purposes we unhesitatingly declare our belief that they cannot alone be relied on either to prevent or to stamp out epidemics of small-pox.

4. We believe that the only trustworthy protection at present known against small-pox, alike for the individual and the community, is efficient vaccination in infancy and subsequent re-vaccination, and that the only effective way of stamping out epidemics of this disease lies in the free use of these agencies.

5. We are so thoroughly convinced that the dangers alleged against vaccination are, as the Royal Commissioners have asserted, "insignificant," even without the additional safeguards which the Commissioners have recommended, that in common with nearly the whole of the medical profession, we not only prescribe it generally, but use it for ourselves, our families, and others, in whose welfare we are personally interested.

6. We repudiate the calumny which has been freely circulated that either we or other members of the medical profession have been influenced in forming or expressing our belief in vaccination by any consideration other than that of the public health, but we think it well to add that a considerable number of us derive no emoluments of any kind from the practice of vaccination.

THE LANE MEDICAL LECTURES.

To the Editors of THE LANCET.

SIRS,—Mr. Christopher Heath, late President of the Royal College of Surgeons of England, delivered during the month of September the second course of the Lane Medical Lectures recently founded in connexion with the Cooper Medica

College in San Francisco. This course was addressed especially to the students of that school but was also attended by some hundreds of medical men of the Pacific coast; the attention of the audience to the teachings of this eminent English surgeon was markedly intense and reverent. The closing lecture, "A Century of Surgery," was replete with illustrations of the advancement of surgery during the nineteenth century. As a contributor to this progress great distinction was given to Lord Lister. Other men, both Europeans and Americans, who have aided in this advancement received appropriate mention. The lectures of Mr. Heath were characterised by a judicious blending of the science and the art of surgery; of the one not so much as to be tedious, of the other enough for guidance to the surgical practitioner. He taught how in boldness not to be rash, how in conservatism not to be inactive. For the appreciated and satisfactory work done by Mr. Heath in San Francisco the New World now brings its honest tribute to add to the honours and renown, so well and worthily won, with which the Old World has so long distinguished him.

I am, Sirs, yours faithfully,

LEVI COOPER LANE, M.D., M.R.C.S. Eng.,
President of Cooper Medical College.

San Francisco, Sept. 29th, 1897.

"INFECTIVE SWINE DISEASES": A CORRECTION.

To the Editors of THE LANCET.

SIRS,—I find in your issue of Sept. 25th the report of my remarks at the Montreal meeting of the British Medical Association on the infectious swine diseases in the United States, in which this statement occurs, "the term 'Schweineseuche' seems to relate to what he understood as 'hog cholera.'" This is a very unfortunate typographical error. I stated that the German "Schweineseuche" and the American swine plague appear to be identical.

I am, Sirs, yours faithfully,

Ithaca, N.Y., U.S.A., Oct. 15th, 1897. V. A. MOORE.

"THE PREHENSILE POWER OF THE HANDS OF THE HUMAN INFANT."

To the Editors of THE LANCET.

SIRS,—Dr. Walter Kidd's argument is a little difficult to follow. Apparently he maintains that the prehensile power of the hands of new-born infants is merely reflex, and that, therefore, it does not afford evidence of man's descent from a lower animal (e.g., ape). I fancy no one will deny that the action is reflex, for it hardly comes within the category of instinctive action, and it certainly is not rational. But all reflexes have meanings, and, since this particular reflex is useless to the human infant but would have been highly useful to a simian ancestor, surely it is not unreasonable to suppose that it is a "vestige"—just such a vestige as the embryonic branchial arches. Dr. Kidd himself mentions a fact which may be used in support of Dr. Robinson's theory; he says the reflex disappears in a few weeks. This is true, but it is also true that reflexes and instincts which predominate in the lower animals (e.g., fish) are to a great extent lapsed and replaced by rational action in the higher (e.g., men).[1] According to the doctrine of evolution, the individual in his development recapitulates the life-history of his race, for which reason the infant at birth is much more simian in type—e.g., as regards his features and his in-turned feet—than he is later, whence it follows that we may expect some reflexes, useful to the ape but useless to the man, to be present at birth, but to disappear later. It further follows that since the foot diverged from the quadrumanous type at a much earlier date than the hand its reflex prehensile power is on that account still less. Dr. Robinson's theory does not, indeed, supply proof that man has descended from an ape-like animal, but it affords strong corroborative evidence. The proofs are very massive and for that very reason cannot be entered upon here, but a striking passage from Professor Weismann may be quoted: "It is not only that, in the light of this theory, numerous facts receive for the first time a meaning and a significance; it is not that, under its influence, all the ascertained facts can be harmoniously grouped together; but in some departments it has already yielded the highest results which can be expected from any theory—it has rendered possible the prediction of facts, not indeed with the absolute certainty of calculation, but with a high degree of probability. It has been predicted that man, who in the adult state only possesses twelve pairs of ribs, would be found to have thirteen or fourteen in his embryonic state. It has been predicted that in this early period in his existence he would possess the insignificant remnant of a very small bone in his wrist, the so-called 'os centrale' which must have existed in the adult condition of his extremely remote ancestors. Both predictions have been fulfilled, just as the planet Neptune was discovered after its existence had been predicted from the disturbance induced in the orbit of Uranus."

I am, Sirs, yours faithfully,

Southsea, Oct. 16th, 1897. G. ARCHDALL REID.

[1] Vide THE LANCET, June 21st, 1897.

"THE IMMEDIATE REDUCTION OF ANGULAR CURVATURE OF THE SPINE."

To the Editors of THE LANCET.

SIRS,—Mr. Jackson Clarke's letter in THE LANCET of Oct. 16th calls attention to a point that is in some danger of being overlooked in the excitement that may attend the first introduction into this country of Dr. Calot's method of correcting the deformity of Pott's disease. The immediate deformity in this disease is of course due to destruction of bone in the anterior portion of the spinal column, while the posterior portion as a rule is unaffected. This deformity can no doubt be corrected by Calot's method, and it may be hoped that the gap thus inevitably formed *may* in time be filled up by new bony growth. But those who have observed the after-history of such cases must admit that the deformity generally goes on growing with the growth of the patient. This is doubtless due to the fact more or less of the growth centres in the front part of the column having been destroyed. Thus the continued normal growth of the posterior part of the spine unaccompanied by a corresponding growth in front must force the column into a curve if consolidation has taken place. The more extensive the caries the greater will be this secondary increase of deformity. Mr. Jackson Clarke does well to deprecate the description of such operations as "successful" immediately after their performance; but I would go farther than he, and would venture to say that the result cannot be judged till, not months only, but years have elapsed—i.e., when the stage of growth is ended.—I am, Sirs, yours faithfully,

Seymour-street, W., Oct. 19th, 1897. E. MUIRHEAD LITTLE.

THE EPIDEMIC OF TYPHOID FEVER AT MAIDSTONE.

(BY OUR SPECIAL SANITARY COMMISSIONER.)

THOUGH the Maidstone people are slow to move, still, they have at last taken action. A public meeting has been held, and after a noisy debate it was decided to form a Ratepayers' Association which will admit as members all direct and indirect ratepayers. It seems only natural to conclude that there has been serious blundering or neglect. A reaction is already manifest in the public feeling with regard to the water company. More than one inhabitant of the fever-stricken districts has observed to me that it was all very well blaming the water, but they wished the authorities would look after the drains. If some members of the District Council are shareholders or directors of the water company, other councillors are owners of house property. In the face of the great calamity which has befallen the town the sufferers are naturally anxious to fasten the responsibility upon some one, and they are beginning to fear that the persistence with which the whole trouble is attributed to the water-supply may result in the avoidance of a full inquiry into other and contributory causes. On the other hand, the temptation to ascribe the entire blame to the water-supply is very great, for it simplifies

the problem to a marvellous degree. For many years the water from the Farleigh springs has been drunk, and it has never been shown that any harm resulted. Why, then, should the authorities have been more on their guard this year than on previous occasions? But so soon as an alarm was raised prompt action was taken. On Sept. 18th the water was suspected, inquiries were immediately made on the spot, and the supply from the Tutsham springs was cut off on the 20th. Not satisfied with this the whole of the supply from the Farleigh district was abandoned on the 29th. Considering that this latter measure exposed the town to considerable danger if a fire broke out, and that there were fairly good reasons to believe that it was only the Tutsham springs which were contaminated, it was scarcely to be expected that the whole of the Farleigh supply should at once be given up. Yet this has now been done, and the probabilities are that no Farleigh water will again be utilised. As the plant connected with this supply is supposed to be worth from £30,000 to £40,000 it will be said that the Company, by abandoning so valuable a property, will have given practical proof of disinterested public spirit. It will then be shown that an ample supply can now be obtained from other sources which cannot be contaminated, and thus it will be urged that all danger is completely removed, the problem satisfactorily solved, and that the authorities have nothing more to do than to rest on their laurels and be thankful. In a little while even the water company will be forgiven and its shortcomings forgotten.

The report of the Local Government Board should defeat any such manœuvres, but this report will not be of much use unless it is published at an early date. The inhabitants of Maidstone are primarily interested in clearly defining the responsibilities for what has occurred. Theirs is no theoretical or imaginary grievance. More than a hundred lives have been lost in consequence of the neglect in the removal of preventable causes. Great bodily misery, physical suffering, and financial distress which might have been prevented have been endured by hundreds of families. Shall this calamity be glossed over and forgotten? Are the responsible authorities to be whitewashed by the mixing of some lime with the water-supply and the abandonment of the Farleigh springs? This would indeed be an easy way of getting out of the difficulty. But if the inhabitants of Maidstone could be so easily satisfied it must not be forgotten that though they are primarily interested the Maidstone epidemic is an event of world-wide importance. Other towns have to be told what has happened at Maidstone. They have their lesson to learn from this terrible example, and will they be satisfied when they are told that it is only necessary to turn off a stopcock here, to turn on another stopcock there, and forthwith one of the most complex scientific problems of the age is settled?

Such a solution can only be qualified as a shirking of the whole question. Unfortunately, the municipal elections are close at hand, and it is too soon to fix responsibilities between this and the beginning of next month, particularly as there has been no public inquiry to enlighten the electors. The Maidstone councillors urge with very great plausibility that this is not a suitable moment for an electoral contest. Party divisions and faction fights must be postponed in the face of the present distress. The authorities must present a united front to battle with the prevailing trouble. They must devote all their energies to coping with the epidemic and not lose precious time in canvassing the electorate; therefore, it is suggested that there shall be no contest, that no opposition shall be attempted, and that each councillor shall be re-elected. Certainly there are good grounds for saying that there should be no election contests in the midst of so serious an epidemic, but this is no reason why there should be no contest after the epidemic is over; on the contrary, it is absolutely indispensable that the inhabitants of Maidstone should have full and ample opportunity of examining the whole question and then of pronouncing their verdict by means of an election, otherwise our boasted self-government is reduced to a mere farce. If Maidstone authorities are to avoid censure by deciding, when difficulties arise, that there shall be no contested election, such a proceeding will establish a dangerous precedent by which elected bodies will escape the responsibilities that accrue from their blundering.

There is no objection to the Maidstone councillors remaining in office for a few weeks longer. This may be convenient under the present circumstances, but if it is justifiable to postpone the electoral contest for a few weeks it would be most unjustifiable to postpone it for several years. If, therefore, the present council succeed in preventing a contest, and consequently remain in office, they should first take a solemn and public pledge not to retain their position for more than a few weeks. It should be clearly understood that in, for instance, three months' time they will one and all resign, and thus force on another election which this time would be contested. Otherwise the council will lay itself open to the gravest accusations. This is a point on which the Maidstone Ratepayers' Association might with advantage insist before it is too late. It is not because there is so much evidence to show that the water has been the medium of spreading the disease that therefore there is nothing else to be done but to alter the water-supply. On the contrary, there is also much evidence to show that there were other contributive causes which must be discovered and removed. It should be borne in mind that there has been typhoid fever in Maidstone in former years which was in no wise put down to the water-supply, that there are now some cases of diphtheria which are not attributed to drinking water, and that the number of cases is increasing in spite of the improvement in the water-supply. This is so much the case that the wisdom of opening a *crèche* may be questioned. The *crèche* which is now about to be inaugurated will undoubtedly render great service to poor families where there are cases of typhoid fever, but by bringing many children together it may help to spread diphtheria. Thus, not only in regard to the typhoid fever epidemic, but in respect to the spread of diphtheria, a general inquiry into the sanitary condition of the town dealing not only with the water-supply, but also with the housing of the poor, private drainage, public sewers, the removal of refuse, &c., is imperatively needed. Great vigilance must be exercised so that this investigation is not at first postponed and then altogether abandoned.

To show that other issues are involved I might mention, for instance, how many persons have complained to me as to the difficulty they experience in obtaining the removal of the refuse from their dustbins. This is not done by the municipality, but by a contractor, and in several instances I found that the refuse had been allowed to remain for more than a month, and that the visits of the dustman were few and far between. Is it necessary that a sensational epidemic directly attributable to dustbins should occur before attention can be called to this obvious neglect of public duty? But, above all, the drainage of the whole town must be thoroughly examined. There is evidence enough to show that at least an inquiry is necessary. Taking, for instance, Buckland Hill, it will be found that the inhabitants there are much troubled by the question of sewer ventilation. A secondary main runs down this street and falls into the principal sewage collector at a very short distance beyond the point where it is joined by the syphon that has passed under the river and brought all the sewage from the eastern side of the town. At the lower part of this street there was a ventilator, but a year or so ago a case of typhoid fever occurred in the house nearest this ventilator. A little higher up there is a magnificent tree which has been allowed to remain in the very middle of the roadway. This tree was supposed to mark exactly the centre of the county of Kent, and for this reason and on account of its beauty it has not been felled; but after the case of typhoid fever which happened in the lower part of the street the tree was utilised as a support for a ventilating shaft, and the ventilator lower down was closed. No sooner had this been done than the inhabitants of the house that stood nearest and on the same level with the tree found that bad odours were blown from the ventilating shaft through the bedroom windows into the upper part of their house. This nuisance seemed so serious that the occupier of the villa in question wrote to the Local Government Board. Evidently he had greater faith in the central than in the local authorities. Some correspondence ensued, and finally a few more feet of piping were added to the ventilator. This, however, did not put an end to the odours. They no longer penetrated the upper windows of the villa nearest to the tree, but invaded the next villa, which stands on a higher level and therefore came into line with the increased height off the ventilating shaft. Now, it should be noted that in the house which has thus been freed from the odours given off by the shaft there has been no case of typhoid fever, but next door, where the odour now prevails, there is a case of

typhoid fever, yet both houses were equally supplied with the Farleigh water.

At the top of Buckland-hill the main sewer turns to the right up the London-road, and then a little further turns again, this time to the left up the Queen's-road. These are very sharp angles for a main sewer.[1] It is very probable that deposits are formed at these points. In any case, at both these corners are street ventilators that give off very foul odours, as I can testify from unpleasant personal experience. There have been several cases of typhoid fever between these two ventilators, though this is one of the best and wealthiest quarters of the town. In the house at the corner of the London-road and the Queen's-road, nearest to what was, at the time of my visit, the more obnoxious of the two ventilators, there is a very severe case of typhoid fever. Indeed, it may be observed in walking through the streets in the western part of the town that where tanyard refuse is put down to prevent the noise of vehicles disturbing the sufferers, and thus testifying to the existence of cases, a sewer ventilator will be found close at hand. This may be a coincidence, but in the several cases which I examined it was a fact. It is also notable that in speaking of the 19 cases of typhoid fever notified in the year 1896 the medical officer of health says in his annual report that "faults of drainage and sewer ventilation nuisance were the ostensible causes in some and direct contagion through nursing in others. Except that 3 cases occurred in Milton-street and 2 on Buckland-hill there was no particular coincidence as respects to locality." Now these two localities stand out very prominently in the present epidemic. Milton-street is one of the thoroughfares where there have been the greatest number of cases, and here the sewer occasions much trouble and has been dug up, repaired, and altered several times, while on Buckland-hill the sewer acts as a ventilator to the main collector that passes below at the foot of the hill. That these facts are not ample enough to prove a theory I readily admit, but they suffice to indicate the necessity for an inquiry. The point to ascertain is whether those houses and localities which suffered most were exposed to sanitary conditions which were not as good as, or which were worse than, those prevailing in other localities where there were not so many cases. Such an inquiry would probably lead to the carrying-out of other sanitary improvements besides the alteration of the water-supply.

In the meanwhile, and whatever neglect there may have been of sanitary questions in the past, it must be acknowledged that the local authorities have displayed great energy in dealing with the actual epidemic. The fitting-up of emergency hospitals has been no light task. Everything was wanting. The houses and the schoolrooms utilised had not the necessary sanitary conveniences. Closets and new drains had to be hastily put in, and it was impossible to find in a small town like Maidstone all that was required. On the other hand, to send up to London involved a loss of time. The work had to be continued day and night without a moment's respite. Nor was it easy to get together some 300 beds for the patients and to lodge more than 100 nurses. Then the patients and nurses had to be fed, and this involved the organisation of a commissariat department which was altogether out of the ordinary attributes of local administrative work. But soon another difficulty arose. A large amount of linen accumulated which was dangerously soiled by the patients. If this linen was scattered over the town and washed anyhow and by anybody the consequences were likely to be very serious. The medical officer of health, Mr. Matthew A. Adams, thereupon conceived the idea of establishing a public laundry for dealing exclusively with the infected linen. With the very efficient aid of Mr. Jackling, the sanitary inspector, a steam laundry, with all the most recent and improved machinery, was promptly opened. Carts are now sent round the town with numbered canvas bags. The linen from each patient is placed in a separate bag distinguished by its number. On reaching the laundry the bags without being opened are plunged in a large copper, where their contents are thoroughly disinfected by prolonged boiling. Then only are the bags opened and each article marked with a number corresponding with that of its bag, and can be washed in the ordinary manner. But so great is the amount of the work that had to be done that it was necessary to establish four large boilers set in solid brickwork, and to put up two huge tents seventy-five feet in length in which the linen is sorted. Another great difficulty soon arose. How was so large a quantity of linen to be dried? Fortunately, in a field opposite there were two oast houses for the drying of hops. These curious-looking, cone-shaped structures are familiar to all who travel in hop-growing countries. In the lower part there is a furnace where smokeless anthracite coal is burnt. Above the furnace and just under the cone-shaped roof there is not a floor, but horsehair matting resting on rafters. It is on this matting that the hops are placed to dry, as the heat passes through readily. For laundry purposes it was necessary to construct a framework all round the roof above this matting so as to hold ropes or poles on which the linen is hung to dry.

The borough surveyor on his side has had no easy task in looking after the flushing of the sewers and of the drains in the houses where there have been cases of fever. It has been necessary to procure and then fit a long hose to all the watering-carts. This hose is carried through the houses and the closets are thus flushed from the watering-carts that stand in the street. Sometimes a hundred gallons of water is thus discharged into a house drain or closet. Then another service of carts had to be organised to take round drinking water while the water-supply mains were being disinfected. The people have very fully responded to the instruction that they were to let their taps run so as to get the lime out of the mains and the branch pipes, for no less than 500,000 gallons of water were thus allowed to escape in about four hours. The smell of the lime is very persistent, and it is anticipated that there will be a tremendous waste of water before this has been completely washed out of the pipes. Under these circumstances the water-supply may run short for a little while; but when once the inhabitants are satisfied that there is no longer any trace of lime in the pipes the supply of water now secured will be ample, and this, of course, without using any of the condemned Farleigh water.

The distribution of the cases of typhoid fever still corresponds with that of the Farleigh water. The last calculation made brings us up to the date of Oct. 15th. At that time a total of 1654 cases had been notified, and about fifty cases have occurred since. Of this total 714 were inhabitants of the Western district and 94 were reported from the asylum, which is also in the west. In the north-east there were 554 cases and in the south east 204 cases. Thus in the three districts where the Farleigh water was drunk there were 1566 cases. The remaining 88 cases occurred in low-lying central districts where the water drunk comes from Cossington and Boarley. Perhaps all these 88 patients had drunk some of the Farleigh water when visiting friends in other parts of the town. In any case a considerable number of them have been proved to have done so. The wonder is that there have not been more victims in the centre of the town, as it is so near and so easy to step out of that district into the districts which used to be supplied with the Farleigh water. Now, however, that no more of this water is drunk the epidemic is evidently subsiding. The local authorities will therefore soon have time and leisure to study the predisposing causes and ascertain why some localities suffered more than others which had the same water-supply.

[1] See Map published in THE LANCET of Oct. 9th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

University College, Liverpool.

THERE were twenty-five entries (including three ladies) for the new course of lectures on Sanitary Science, which number is considered very satisfactory. From eighteen to twenty students are attending Professor Boyce's pathological class at Ashton Hall. Ten gentlemen are also pursuing bacteriological investigations at the evening class, also under Professor Boyce's supervision.

Liverpool Medical Institution.

The first meeting of the session was held on Oct. 7th, when the President, Dr. Caton, delivered the inaugural address, the subject of which was Notes of a Visit to Poland and Russia on the occasion of the Twelfth International Medical Congress (with lantern illustrations). The meeting was exceptionally large, and much interest was evinced in

the views of the principal places of interest in Warsaw, Moscow, St. Petersburg, and Helsingfors. The members and associates were afterwards entertained by the President to supper *à la Russe*, followed by a smoking concert, which was enlivened by songs and recitations.

Liverpool Royal Infirmary.

The following house appointments have been made at the Royal Infirmary: House physicians: Dr. H. M. Crake, Dr. E. E. Laslett, and Dr. D. G Hurter. House surgeons: Dr. J. E. Smith, Dr. F. S. Pitt-Taylor, and Dr. J. H. Willett. Resident medical officer to the Lock Wards: Dr. H. M. Henderson Dr. Laslett won the Torr Gold Medal for Anatomy at University College, Liverpool, in 1894. Dr. Crake obtained the Gold Medal for Physiology in 1894. Both gentlemen held Holt Tutorial Scholarships for 1896-1897 at the same College.

Liverpool Medical Club.

The winter session 1897-98 for club debates and social entertainments commenced on Oct. 14th, when a successful smoking "social" was held. A goodly number of members were present and the evening passed off in a very agreeable manner.

Mr. Victor Horsley.

Mr. Victor Horsley's successful contest for the vacant seat on the General Medical Council was a source of much satisfaction to the medical profession in Liverpool generally, where his candidature was warmly supported. Mr. Horsley has been an honorary member of the Liverpool Medical Institution for some years.

Munificent Donation to the Liverpool Consumption Hospital.

Lady Willox the wife of Sir John Willox, M.P., has given a donation of £2000 to the proposed new building fund of the Consumption Hospital. Her ladyship has always taken the warmest interest in the welfare of the hospital, where she is a constant visitor.

The New Mayor of Bootle.

Dr. John McMurray has been unanimously selected for the Mayoralty of Bootle for the ensuing year. Dr. McMurray, who is a comparatively young man, has been in practice in Bootle for about ten years, and is honorary surgeon to the Bootle Borough Hospital; he is also visiting medical officer to the Kirkdale Industrial Schools of the Liverpool Select Vestry. He was formerly assistant medical officer at the Liverpool Workhouse Hospital. Dr. McMurray is also a member of the Bootle School Board.

Birkenhead Medical Society.

The annual meeting of this society was held on Oct. 8th, Dr. Marsden, President, being in the chair. The following gentlemen were elected office-bearers for the ensuing year, 1897-98, viz.:—President: R. Sydney Marsden, M.B., D.Sc., F.R.S. Edin. Vice-President: Thos. S. Floyd, M.A., M.D. Dub. Treasurer: James Pinkerton, M.D., C.M. R.U.I. Secretary: Wm. Leask, M.B., C.M. Edin. Librarian: S. Wilkinson, M.R.C.S. Eng. Council: W. R Floyd, B.A., M.B., Ch.B Camb.; Joseph Blood, M.A., M.D., C.M. Dub.; J. H. Fardon, M.R.C.S. Eng.; Francis Johnston, M.B., C.M. Glasg.; and S. H. Nazeby Harrington, M.R.C.S Eng.

Oct. 19th.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

The Eye Infirmary, Newcastle-upon-Tyne.

A SPECIAL meeting of the above charity has just been held to take into consideration the financial position of the institution. The Mayor presided. The secretary made a statement to the effect that the expenditure had now for some years exceeded the income by some £300, and that capital had been spent to meet the deficiency. The Mayor alluded to the attempt recently made to amalgamate the Eye Infirmary with the Royal Infirmary, a proposition which the Royal Infirmary had rejected. Mr. M. Nesham drew attention to the small number of subscribers, and said at the present rate of expenditure the capital of the Eye Infirmary would be exhausted in four years. The Eye Infirmary is a very perfectly-equipped institution, admirably adapted for its purpose, and in years gone by was very successfully carried on. That it should have fallen upon such evil days is much to be regretted, and that means may be forthcoming to enable it to resume its old flourishing condition is much to be desired.

District Nursing.

Sunderland is one of the most enterprising towns in the north of England, and in the particular of district nursing it is not behind. A most influential meeting has just been held under the presidency of Archdeacon Long with the object of placing district nursing in Sunderland upon a firmer footing. The Marchioness of Londonderry, ever to the front in philanthropic movements in the north, delivered an excellent address on District Nursing. Mrs. Watkins, a daughter of Sir H. Thompson, also addressed the meeting. Mr. G. B. Morgan, J.P., the senior surgeon to the Sunderland Infirmary, moved a resolution, which was unanimously carried, proposing that the district nursing committee should affiliate with the Queen Victoria Jubilee Institute for Nurses. It is difficult to over-estimate the enormous amount of good done by the various district nursing associations in the north of England, almost all the large towns and many of the country districts deriving good from their most laudable efforts.

Typhoid fever from eating Uncooked Mussels.

Mr. J. Cromie reported last week to a meeting of the Blyth port sanitary authority a number of cases of typhoid fever in the district the result of eating uncooked mussels collected from beds in close proximity to the spot where the sewage from the hospital for infectious diseases ran into the river. This is not the first time Mr. Cromie has drawn attention to typhoid fever contracted in a similar way. The authority passed a resolution ordering that a warning should be posted pointing out the danger of eating mussels taken from the River Blyth—the least it could do under the circumstances.

New Site for the Royal Infirmary, Newcastle-upon-Tyne.

The freemen of Newcastle, of whom Mr. John Hall is one, agreed a few days ago to give to the governors of the Royal Infirmary a site of eight acres on the Leazes as a free gift. This is the site which the governors of the infirmary wish to acquire, and the one which, in their opinion, will be the most useful for their purpose. The freemen have always shown a most sympathetic spirit towards the Royal Infirmary in its endeavour to procure a new site, and this magnificent gift, valued at some £80,000, is a liberal response on their part to the princely offer of Mr. J. Hall to expend £100,000 of his own money in building a new infirmary. Unfortunately, however, while the herbage only belongs to the freemen the soil is the property of the corporation, and therefore the site cannot be acquired without the aid of the corporation. If that were given an act of parliament would still be required to enable the transfer of the land to the infirmary. On Oct. 13th the Town Moor Management Committee, to whom the petition from the infirmary for a site had been referred by the corporation, met, and as after discussion it was found that there was a pretty equal division of feeling, one section proposing that ten acres on the Leazes and the other that ten acres of the Ball Park should be given for the purpose, it was finally resolved that the committee should recommend the council to give one or other of these two sites, leaving it to the council to make a selection. On Monday last the council met and after a long and animated discussion separated without determining the question, which is again to be discussed on Oct. 28th.

Oct. 19th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

University of Aberdeen.

THE medical, arts, and agricultural classes opened for the winter session on Oct. 13th. At the English literature class Professor Grierson devoted a portion of the opening lecture to a reply to remarks by a writer in THE LANCET on the "Decline of the Scottish Universities." The University court have by a majority resolved that in the present state of the finances they are unable to hand over to the town council the buildings fronting Broad-street which are intended to be removed. The completion of the new south wing of the buildings extension at Marischal College

will leave the committee with a deficit of perhaps £20,000, and until further funds are raised no further buildings can be undertaken. Hence the desire of the court not to sacrifice in the meantime the rents of the properties mentioned. Hopes, however, are entertained that by a further contribution from Government and private subscriptions the whole scheme will ultimately be carried out, including the widening of Broad-street and the removal of the old, and the erection of a new, Greyfriars church.

New Hospital Buildings in Aberdeen.

The new medical block at Aberdeen Royal Infirmary—the last instalment of the Jubilee extension scheme of 1887—is now completed and was opened for patients on Monday last, Oct. 18th. It is a granite building, four storeys in height with a frontage of 200 feet to Woolmanhill, and will accommodate 94 patients in all, while the total cost of the block has been about £15,000. On each of the ground, first, and second floors are two wards for male and female cases respectively of the ordinary type, and the top storey is adapted for eight erysipelas patients with two isolation beds. On the first three floors, in the central portion, are the necessary rooms for the work of the wards, and the corridors are eight feet wide. The wards and corridors are floored with Acme patent wood blocks—which have not been used so far north before—and the windows are on Nap's revolving principle. The interior of the walls throughout is finished with enamel and all angles have been rounded. The water-closet, slop, and other sinks are from Doulton and Co., of London, and are of special make suitable for hospital purposes. The heating and ventilation are on the Sturtevant system, and in the wards are Teake's barless grates. On the west side of the building on the upper floors are balconies with wrought-iron railing for airing purposes. At the end of each of the male wards is a separate sitting- and smoking-room and at the end of the female wards a sitting-room. The Otis Elevator Co., of London, have supplied a hydraulic lift which is fitted with safety grip chisels. The whole of the hot and cold water-pipes in connexion with the building are of copper. The stairs are formed of stone and the landings as well as the balconies are paved with Peake's tiles. A tunnel runs under the hospital central yard and connects with the surgical block and mortuary. The building is lighted by electricity and telephonic communication will be introduced. Chorlton and Co.'s patent cots and other hospital furnishings of modern type have been provided under the supervision of Mr. Charles Angus, M.B., C.M. Aberd., the new medical superintendent. The new convalescent hospital at Pitfodels, Cults, about four miles from the city, to be worked in connexion with the Royal Infirmary, and previously referred to in THE LANCET, is also completed, and was likewise opened for patients in the course of this week. It is a granite building of two floors in front and three floors in the rear, and will accommodate twenty-six patients besides the requisite nurses, &c. Water is procured from Aberdeen city water-supply.

New Medical Scholarship at Aberdeen University.

The Fence Scholarship in the Westminster Medical School has now been transferred to Aberdeen through the agency of Dr. Charles Phillips, the well-known writer on pharmacology, whose name the foundation will bear. The annual value is £40, and the scholarship will be awarded in connexion with the materia medica department. The thanks of Aberdeen University Court have been voted to Dr. Phillips and the London trustees.

University of Glasgow.

The Medical Session was opened on the 14th inst. There was no general address to the students, and the only noteworthy feature of the commencing session was the introductory lecture delivered by Dr. Stockman, the newly-appointed Professor of Materia Medica and Therapeutics. Dr. Stockman discussed the relationships between pharmacology and therapeutics and advocated the combined study of pharmacological investigation and clinical observation. He was introduced to the students by Dr Gairdner, and met with a cordial reception. At a meeting of the University Court on the 15th inst, a communication from Dr. James Finlayson and Dr. Hector Cameron was read offering to the University a replica of a portrait of Lord Lister painted in 1895. The Court accepted the portrait with thanks to the donors. Leave of absence for the winter session was granted to Professor Joseph Coats on account of ill-health. Professor Coats has been much benefited by his residence during the summer in the Channel Islands, but it is deemed advisable that he shall have a further rest, and he is to spend the winter in New Zealand. The University Court have approved of the suggestions made by the General Council that the conditions under which "honours" are granted to graduates in the medical Faculty shall be printed in the University Calendar. They have also accepted the offer of the Bellahouston trustees to provide a certain number of gold medals annually to be awarded to worthy candidates for the degree of M.D. Professor Gairdner and Mr. William Crum have been appointed to represent the university on the board of managers of the Victoria Infirmary. The resignation by Dr. C. O. Hawthorne, of the Lectureship in Materia Medica and Therapeutics in Queen Margaret College, has been intimated to the University Court.

Medical Appointments.

Mr. Albert A. Gray, M.D. Glasg., has been elected assistant pathologist to the Glasgow Cancer Hospital. Mr. John A. Kennedy, M.A., M.D. Glasg., has been appointed visiting physician to the convalescent home of the Royal Infirmary, Glasgow. Mr. J. C. G. Duffus, M.A., M.D. Aberd., has resigned his position as assistant surgeon to the Royal Infirmary, Glasgow. The in-door and out-door house-surgeonships to the Glasgow Maternity Hospital are vacant. It has been decided by the managers of the Glasgow Samaritan Hospital to appoint three assistant medical officers to the "Agnes Barr" Dispensary.

Western Infirmary, Glasgow.

The atmosphere of the infirmary is at present in a somewhat stormy condition. The resignation by Dr. Gavin P. Tennent of his position as one of the visiting physicians was followed by a resolution of the managers to appoint an additional surgeon and not to fill up the vacancy created on the medical side by Dr. Tennent's retirement. This resolution was accompanied by a plan for the redistribution of the wards, and some of the features of this redistribution have given umbrage to certain members of the staff. The friction has, indeed, been so extreme that rumour confidently credits one of the leading surgeons with the determination to transfer his services to another hospital should the proposal to reduce the number of beds under his care be carried into execution. The new arrangements also contemplate the allotment of a certain number of beds to "the clinical teaching of materia medica and therapeutics." It is understood that this decision is the result of pressure from the Glasgow University authorities, who not unnaturally desire to secure for the newly appointed professor of materia medica opportunities for clinical observation. What the public will think of an open proclamation to devote hospital beds which are supposed to be supported for the relief and cure of patients to "the clinical teaching of materia medica and therapeutics" remains to be seen. For the position of additional visiting surgeon created by the decision of the managers there are several candidates, but the contest is understood to lie between Dr. J. Crawford Renton and Dr. T. Kennedy Dalziel, each of whom is already an assistant surgeon to the infirmary.

Oct. 19th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Meath Hospital, Dublin.

THE address introductory to the medical session was delivered on the 11th inst. at the Meath Hospital by Sir Philip Smyly, and dealt mainly with the work which had been accomplished by the General Medical Council in improving the medical curriculum. Lord Holmpatrick filled the chair, the vote of thanks to the lecturer was proposed by Viscount Powerscourt, while the second chair was taken by Sir George Duffey, the President of the Royal College of Physicians of Ireland.

Death of Mr. Stamer O'Grady.

Much regret is expressed by the medical profession here and by the public at the sudden death of Mr. Edward Stamer O'Grady, which took place in the evening of the 18th inst. The deceased was a Bachelor in Medicine of the University of Dublin and a Fellow of the Royal College of Surgeons

in Ireland. He succeeded the late Mr. Butcher as surgeon to Mercer's Hospital, and was for many years a lecturer on surgical anatomy at the Ledwich School of Medicine, and a member of the Court of Examiners of the Royal College of Surgeons. At a time when the clinical class of Mercer's Hospital was the largest in Ireland Mr. O'Grady was one of its most brilliant and successful teachers.

Lunatics in Workhouses.

At the last meeting of the Celbridge board of guardians Colonel Sir Gerald Dease, who was in the chair, spoke very strongly in favour of a resolution as to the desirability of provision being made in the Local Government Bill of next session for the removal of all lunatics and idiots from the workhouses in Ireland to the asylums.

The Royal College of Physicians of Ireland.

The annual meeting of the Royal College of Physicians of Ireland took place on St. Luke's Day, Oct. 18th, when the officers of the college for the ensuing year were elected. In the evening the annual banquet of the President and Fellows was held in the college hall.

The Belfast Workhouse.

At the usual weekly meeting of the Belfast board of guardians, held on Oct. 12th, the half-yearly report of Mr. Agnew, inspector of the Local Government Board, was presented, and, as one of the guardians said, it would seem from it "that the whole institution there was unfit for human habitation." Mr. Agnew recommended the substitution of hair for straw mattresses. On the day of his inspection he found the bread and beef were very unsatisfactory, the former being not properly ovened and the latter of inferior quality and almost devoid of fat. He took exception to the ventilation; the drainage from the separation and lunatic departments was in a very unsatisfactory state, and should be remedied at once; the water-closets in the separation department were unsatisfactory, those in the infirmary were in a disgraceful state owing to the want of water, and those in the yards for the use of the lunatics were also in a most insanitary state from the same cause. With regard to the pauper attendants Mr. Agnew said he understood from the officers that they were in the habit of soliciting money from the friends of the patients, and he suggested that a few temporary nurses should be appointed with a view of removing the pauper nurses from attendance on the sick. He had further to remark that some of these women drank and used foul language to visitors who did not respond to their demands for money. The bath-room he reported as being in a discreditable state. The mortality from typhoid fever during last year in the union hospital was only slightly over 8 per cent., which was very low. A committee was appointed to consider this report.

The Typhoid Fever Epidemic in Belfast.

The typhoid fever epidemic (the cases of which are not localised in one district, but scattered all over the city) is slightly diminishing, and the public are still very much exercised as to its origin. At the last monthly meeting of the City Corporation some members hinted that it might be due to the water-supply, and as a result the water commissioners have obtained a report, dated Oct. 13th, from Dr. Frankland, of Birmingham (who recently analysed very fully the Belfast water), on this subject. He is of opinion: 1. That whilst the present sources of the Belfast supply are undoubtedly exposed to a certain amount of contamination in consequence of the gathering-grounds being to some extent populated and under cultivation, the best-known methods for rendering this water safe for consumption have been adopted. The supply is, in fact, provided with most extensive storage reservoirs and with magnificent filtration works. 2. That bacteriological evidence shows that these methods of purification, if properly attended to, furnish most effective barriers against the passage of disease-producing bacteria to the water consumer. 3. That towns which, like London, are supplied with water derived from enormously more populated and cultivated gathering-grounds, but which water is submitted to these same methods of purification, enjoy the most remarkable freedom from typhoid fever. 4. That in view of these facts it appears in the highest degree improbable that the typhoid fever epidemic now prevalent in Belfast should be chargeable to the water as sent out to the consumer. 5. That in view of the duplex character of the supply, a water-origin of the outbreak would almost certainly be betrayed by its general limitation to one of the two water areas of which Belfast is composed. 6. That simultaneous outbursts of typhoid fever should have taken place in outlying districts dependent on the same supply. 7. That the grave dangers of domestic cisterns require careful consideration, with a view to their use for drinking purposes being discontinued, and that taps on the rising main be provided in all houses. It was stated at a meeting of the Public Health Committee, held on Oct. 14th, that the water referred to and condemned at the previous meeting turned out on investigation not to be Cromac water, but had its source in an old-fashioned surface well in no way connected with the celebrated Cromac springs.

The Belfast Hospital for Sick Children.

Mr. W. G. Mackenzie has been appointed consulting surgeon, Dr. T. S. Kirk surgeon, and Dr. Lynass assistant surgeon to this hospital.

Opening of the Winter Session at Queen's College, Belfast.

Lectures in the Medical Faculty at Queen's College, Belfast, began on Oct. 19th, when the various professors met their classes. At the Royal Hospital the session was inaugurated on the same day by an introductory address from Dr. Lorrain Smith, the pathologist to the hospital, on the Value of the Facts Observed in Medicine.

Trained Nurses in Irish Union Hospitals.

At the last meeting of the Clonmel guardians, Mr. R. Bagwell said that Dr. Sheehan, Roman Catholic Bishop of Waterford, proposed to send to the Union Hospital a trained nurse from a London hospital, who would instruct the nuns and attendants and all other persons concerned. It would be no expense to the ratepayers to have her. She had been selected by persons who were connected with the movement generally in Ireland. He (Mr. Bagwell) thought it a step in the right direction and proposed a resolution approving of a trained nurse, nominated by the Right Reverend Dr. Sheehan being accommodated on the union premises on the understanding that the guardians shall not be responsible for any part of the expense. The resolution was carried and the guardians also expressed their thanks to the Bishop for his kind action in the matter.

Oct. 19th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Advances in Radiography.

M. DOYEN has been enabled by means of the x rays to determine the site and shape of a dilatation of the œsophagus, and M. Radiguet has made an admirable print from the negative thus obtained. The method of procedure is as follows. The œsophagus is first explored with an olive-headed metallic sound, and then with two or three elastic hollow sounds filled with mercury, which are photographed *in situ*, their place having been first observed by the fluorescent screen. By using a sound which terminates in a slender pocket of indiarubber filled with mercury it is also easy to determine the size and shape of œsophageal strictures.

Intravenous Injections of Sea Water.

At a recent meeting of the Biological Society M. Quinton mentioned that he preferred injections of sea water to those of salted serum. As a consequence of his researches in evolution presented to the Academy of Sciences he has been led to suppose that "*le milieu intérieur des organismes élevés (mammifère, oiseaux) devait être un milieu marin*" The learned writer means by this that as all the higher organisms, according to the teachings of evolution, have ascended from a less highly organised marine ancestry the more nearly that the conditions under which their cells grow ontogenetically, approximate to the conditions of the phylogeny the better it is for them. According to this hypothesis the liquid which bathes all the cells of the individual ought to be chemically similar to sea water. To confirm this theory four sets of experiments have been made at the College of France in the laboratory of M. F. Franck. The first series of which M. Quinton read an account consisted in bleeding an animal to such an extent that death would have inevitably followed had the animal been left alone. The animal in question thus placed under

conditions barely compatible with life, and as a consequence specially liable to be affected by any toxic condition, was then given an intravenous injection of sea water. The dogs experimented on not only survived but recovered with remarkable quickness, and the first dog, some ten days after the operation, showed as tested by the colorimeter a larger proportion of hæmoglobin than before the bleeding. Another dog in which the number of corpuscles fell from 6,800,000 to 2,900,000 per cubic millimetre after the bleeding was attacked by a purulent infection, but showed after an injection of sea water, and probably as a consequence of its fight against the septicæmia, a remarkable degree of leucocytosis. M. Quinton thinks that artificial serum only enjoys the reputation it does on account of its holding in suspension the same salts which are constituents of sea water, and that sea water is physiologically superior. Further experiments will, however, have to be made.

The Congress of Surgery.

The eleventh congress of the French Association of Surgery was opened on Oct. 18th in the great amphitheatre of the Faculty of Medicine at Paris under the Presidency of Professor Gross, of Nancy, a large number of French, Belgian, and Swiss surgeons being present. Professor Gross made an important speech in which he passed in review all the recent victories of science, and referred particularly to the services which the discovery of the Roentgen rays had rendered to medicine and surgery. This medium, as Professor Ollier remarked, allowed one to make a veritable necropsy of the skeleton in the living being. M. Poncet, of Lyons, read a paper upon Botryomycosis in Human Beings, in which he argued that certain papillary tumours in man were identical with the botryomycosis caused by a fungus which brings about complications in the castration of horses. M. Berger read a paper upon Epithelioma of the Neck having a Branchial Origin, and mentioned certain aberrant epitheliomata of the thyroid body. M. Lavise, of Brussels, read a communication upon the Treatment of Hernia, and M. Demous, of Bordeaux, one upon Contusions of the Abdomen. The Congress lasts for a week, and very important communications are announced by M. Doyen, M. Calot, M. Tuffier, M. Le Dentu, M. Jonnesco, and others.

The Etiology of Cirrhosis in the Intemperate.

In the Academy of Medicine M. Vallin adversely criticised the views expressed by M. Lancereaux in a communication made to the Academy some time ago,[1] views which M. Vallin considered might have a prejudicial effect on an important branch of industry. M. Lancereaux has found that cirrhosis results from the excessive use of wine, say, from 2 to 6 litres (i.e., from 3½ to 10½ pints), continued for several years, and he quoted in support of his assertion statistics of 210 cases, in 68 of which wine only was the beverage taken in excess, while in 120 both wine and spirits were so taken. M. Lancereaux, in fact, attributed cirrhosis to the use of wine rather than to the use of spirits, the real source of mischief, in his opinion, being the salts of potash. He administered bisulphite of potash for long periods of time to rabbits, guinea-pigs, and dogs, the doses varying from 2 to 6 grammes—i.e., from 30 to 90 grains—and he found when the animals were killed after the lapse of sixteen or eighteen months that they suffered from cirrhosis in all stages. These facts led him to believe that the "plastering" of wine conduces to cirrhosis, and he accordingly urged the prohibition of "plastering." M. Vallin, however, considers that before legislating on the subject it is necessary to have confirmation of the views held by M. Lancereaux. In the first place, the experiments upon which he relies are open to criticism, for the daily dose of 2 grammes of bisulphite of potash given to a rabbit corresponds to a daily dose of 60 grammes (i.e., 2¼ oz.) for an adult man, a quantity which seems excessive; and, moreover, beer and gin, although they cause cirrhosis, only contain a small amount of salts of potash. It must also be remembered that the wine-drinkers quoted by M. Lancereaux imbibe with the wine a quantity of alcohol corresponding to 100 grammes of absolute alcohol (= 260 grammes of brandy) per litre of wine, and it is quite possible that such doses of alcohol might produce the hepatic lesions mentioned by M. Lancereaux, altogether without reference to the salts of potash. It would therefore be advisable in the first instance to collect statistics showing the proportion of cirrhotic cases in countries (the French colonies, for instance) where the use of wine is quite unknown. Aeration of the must is available as a means of preservation instead of "plastering," but very precise statistics would be required to justify such a revolution in the wine trade. M. Lancereaux replied to M. Vallin that in explaining the etiology of cirrhosis he relied on obvious clinical facts. Pathological observations show that the livers of men who drink three litres (five and a quarter pints) of wine over a period of several years are enlarged and merely hyperæmic; they will pass into cirrhosis, which is no more than a final stage. In spirit-drinkers, on the other hand, the liver is fatty and has no "bi-venous" lesions. Cirrhosis, moreover, is unusual in the colonies where the use of wine is unknown. In proof of the injurious effects of plastered wines he mentioned that cirrhosis is comparatively rare in Burgundy, where the wines in use are not plastered, but it is common enough in Paris. M. Laborde said that he did not entirely agree with M. Lancereaux, and asked permission to submit on a future occasion the results of some investigations which he had undertaken.

Oct. 19th.

[1] THE LANCET, Sept. 18th, 1897, p. 748.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The International Conference on Leprosy.

THE International Conference on Leprosy was formally opened on Oct. 11th in the large hall of the Imperial Health Office, Professor Lassar, as President of the executive committee, being in the chair, the other members of the committee being Professor Virchow, Dr. Armauer Hansen, of Bergen (Norway), Professor Besnier, of Paris, and Dr. Ehlers, of Copenhagen. A great many leading dermatologists and hygienists took part in the proceedings. The opening ceremony was attended by representatives of the Government, the university, the Berlin Municipality, the army medical staff, and the Berlin medical societies. Professor Lassar delivered an inaugural address in which, after welcoming the visitors, especially those who had come from foreign countries, he said that the objects of the conference were, firstly, to afford the members an opportunity of discussing questions concerning leprosy, and, secondly, to draw the attention of the various Governments to these questions. Professor Virchow was then elected President, and Professor Lassar, Professor Besnier, and Dr. Ehlers vice-presidents of the Conference. Count Posadowsky, Secretary of State for Home Affairs, thereupon made a complimentary speech, in the course of which he stated that the proceedings of the Conference were regarded with great interest by the Government and that the advice given by the eminent men who had now assembled in Berlin would undoubtedly be followed in the struggle against this terrible disease. The first address was delivered by Dr. Hansen, who was received with loud applause. He emphasised the necessity of isolation of lepers, a measure which he said was as much in the interest of the patients as in that of the community at large. It has been found by experience in Norway that lepers who have been placed in special homes regain the power of doing work, and in this way once more become useful members of society. Leprosy being an affection of many years' duration this fact should not be neglected. In Dr. Hansen's opinion the efforts of Unna, Carasquilla and Danielsen to cure leprosy by means of drugs or by serum treatment have been quite ineffectual. Leprosy diminishes under the influence of strict isolation and increases again when isolation ceases to be enforced. He is hopeful that the disease will have disappeared from Norway in the course of the century now approaching. In the cases where isolation in special asylums is not possible the patient should at least have a room to himself, together with bedding and table utensils set apart for his use. Cleanliness is the best safeguard against infection, and it has been found in America that the cleanly habits of the people had the effect of rendering the spread of leprosy much slower than in the majority of European countries. The hypothesis that leprosy might be due to hereditary influence is erroneous.—In the ensuing discussion Professor Dehio, of Dorpat, stated that the principles which were in force in Norway were also followed in Russia; isolation, however, was not compulsory, but voluntary on the part of the patients. The effects of this system were very satisfactory.—The French delegate, Professor Besnier, of

Paris, was of opinion that careful surveillance of lepers and the taking of precautions with a view to protect their families were sufficient and that compulsory isolation was not necessary.—The further proceedings of the conference will be reported in my next letter.

The Berlin Dermatological Society invited the members of the conference to a meeting held in their honour on the evening of Oct. 13th. After the usual introductory courtesies Professor Lassar delivered an address on public hygiene and its relations to venereal diseases. Professor Kaposi and Professor Neumann, of Vienna, and Professor Besnier, of Paris were at the same time elected honorary members of the society.

The German Association of Naturalists and Medical Men.

The meeting of this association, which took place in the last week of September in Brunswick, was attended by fewer medical men than on any previous occasion. This fact is partly due to the International Congress in Moscow having attracted an enormous number of German visitors, who naturally felt themselves disinclined to take part in a second great scientific meeting held so soon afterwards. Another cause of the falling-off in the attendance is the great number of congresses of the special branches of medicine. The *Deutsche Medicinische Wochenschrift* accordingly once more suggests that the general congresses of all branches of medicine should be held only every second year, so that the intervening years will be free for special congresses. The next meeting will be held at Düsseldorf in Rhenish Prussia.

The Practitioners' Association.

The last meeting of the Practitioners' Association was held in Eisenach, and as it happened to be the twenty-fifth anniversary the introductory proceedings were marked by more ceremony than usual. The principal subject of discussion was the course to be adopted for the repression of unqualified practice. Fines for unqualified practice were abolished in Germany as far back as 1867, and in no small degree through the efforts of a great combination of medical men who believed that the public had become sensible enough to abstain from consulting quacks. This opinion, however, was not justified by the results, for quacks have greatly increased in number during recent years, and the harm done by them to the medical profession and the public is immense. Dr. Leut, of Cologne, quoted some interesting figures showing the extension of quackery, and after his address, which was followed by an animated discussion, the meeting almost unanimously adopted the following resolutions:—(1) That the abolition of the laws against unqualified practice has done great harm to the medical profession and to the public; (2) that in consequence of unqualified persons engaging in medical practice with impunity the public fail to distinguish between qualified and unqualified men; and (3) that the laws regulating the practice of medicine are in need of alteration. The second subject of discussion was the appointment of medical officers for the inspection of schools. The meeting unanimously approved of the appointment of medical men in connexion with schools in order to control the hygienic condition of the classrooms, to take notice of the health of the children, and to prevent over-pressure. The other subjects on the programme were of minor interest.

Oct. 17th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The Lakes as a Source of Drinking-water.

THE north Italian towns, as a rule, are badly supplied with drinking-water pure in quality and abundant in quantity, Milan alone, for example, being a perennial sufferer from that cause, and periodically agitated by controversy as to which of her (at least) five projects for the introduction of "acqua potabile" she should end by adopting. Meanwhile, her Swiss neighbour has been furnishing her with a suggestion she would do well to consider. For some time past the Confederation, through some of its most eminent hygienists, has been experimenting on the Lake of Geneva as to whether by going deep enough it would not be practicable to draw from that sheet of water a constant supply of "acqua potabile" for the many towns upon its banks. The other day a considerable party of medical men, sanitary officers, and public-minded citizens started on board a steamer from Lausanne to make a final experiment in the series that has for some time been in progress. They dropped anchor about 700 metres from the shore of Lutry, at a point where the lake is 120 metres deep. Thereafter they let down a number of tubes and drew up water from a depth of 100 metres. On trial this water was found to be excellent as a beverage, and on subsequent analysis it proved to be absolutely pure. Now, it is being asked, why should not Milan make similar experiments on Lake Como quite near, and if they turned out as satisfactory as those on the Lake of Geneva, why should she not proceed to utilise the water for her ever-increasing population and for her large contingent of the travelling world? Lake Como has a depth of 416 metres between Bellagio and Varenna and one of 150 metres between Bellagio and Cadenabbia. Its superficial space, as a whole, is 143 square kilometres and its waters are fed by thirty-seven mountain torrents and twenty-one streams. As the Swiss Commission seems to have made out, you have only to go deep enough in such extensive inland seas as the greater lakes on either side of the Alps to find water deliciously fresh, absolutely untainted, and almost illimitably abundant. As already indicated, in Lake Como, well-nigh at her door, Milan possesses such a natural reservoir. Assuredly the Swiss experiment is well worth imitation, and if successful might be followed by other north Italian cities in proximity to the Lago Maggiore and Lago di Garda. Milan in an especial degree is called upon to initiate some such enterprise. More than the rest of Italy she is in constant dread that the contract for carrying our Indian mails and travelling public by the Brindisi route should lapse, other competitors for that lucrative undertaking continuing to tender offers peculiarly tempting. Among the objections to Italy retaining the contract are the grave inconveniences of the railway service at Brindisi itself and (to say nothing of the frequent luggage robberies) the insanitary state of the halting-places along the route, for instance, Bologna, and in a graver degree Milan from her very bad water-supply. No time should be lost, therefore, in minimising, on at least one important side, the objections which militate to her disadvantage—objections which if persistently ignored may cost Italy a source of revenue which she has enjoyed for a quarter of a century and deprive the Lombard capital of resources not to be replaced.

The Yellow Fever in New Orleans and the Italians.

From Italian correspondents residing in New Orleans it would appear that the epidemic of yellow fever in that city and neighbourhood shows little sign of diminution. One cause of its permanence is the refusal of the Italian population to report incipient cases to the sanitary authorities. "Our compatriots," says one correspondent, "more than any other part of the community are stubbornly contumacious (*restii*) in thwarting the provisions of the Commission of Hygiene," and the disease has gained ground in the Italian quarter proportionally. Philip-street represents the core of that quarter, and there the sanitary inspectors have had to invoke the police so as by main force to effect an entrance into houses where the inmates were known to be dying or dead from yellow fever. Cases are cited by the correspondents above referred to, such, for instance, as that of a young woman, whose father had died six days before from the fever, and who, struck down by the malady, was herself almost at the point of death. On the arrival of the sanitary officers her relatives, suspecting their object, rolled her up in a sheet and tried to smuggle her out of the house and convey her to some other place. The attempt was frustrated in the nick of time; the dying girl was rescued by the officers, and the rest of the family accommodated in the public "lazzaretto." Such incidents, familiar enough in Naples during a cholera epidemic, strike a jarring note when reported from such a city as New Orleans and tend to explain the extreme unpopularity of the Italian element in its population.

Oct. 18th.

AMBULANCE COMPETITION IN GLAMORGANSHIRE.—The annual ambulance competition, held under the auspices of the Glamorganshire County Council, took place at Pontypridd on Oct. 9th. Seven teams competed. The first prize was won by the Llancarvan team. The judges were Dr. Williams, of Cardiff, and Dr. Thomas, of Ystrad.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS.—The following gentlemen passed the Second Examination of the Board in the subjects indicated:—

Monday, Oct. 11th:

Anatomy and Physiology.—Samuel Ernest Atkinson, Benjamin Holroyd, James Ebor Bolton, Ernest John Cawshaw, and Talbot Carter Mitchell, Yorkshire College, Leeds; Clifford Price, University College, Cardiff, and St. Mary's Hospital; Miguel Arango, Bogota University, Columbia, and St. Mary's Hospital; Robert James Harbinson and William Stewart Dickie, St. Mungo's College, Glasgow; William Matthew Hunter, Queen's College, Belfast; Leonard Augustine Moore, University College, Bristol; Matthew Frederick Foulds, Owens College, Manchester; George Archibald Carter, Surgeons Hall, Edinburgh; Harold Myrie Cory, Mason College, Birmingham; Frank Gray Quinby, University College, Liverpool; Robert Edward Hodgson, St. Mary's Hospital; John Valérie, St. Bartholomew's Hospital; and Charles Ellard Van Rooyan, Medical College, Ceylon.

Seventeen gentlemen were referred back to their professional studies for three months and one for six months.

Tuesday, Oct 12th:

Anatomy and Physiology.—Thomas Young, Leonard Edgar Whitaker, Gerald William Stone, and Walter Ernest Llewelyn Davies, St. Bartholomew's Hospital; John Stephenson Clarke, Cambridge University and St. Thomas's Hospital; William Edward Denniston and Charles John Ernest Edmonds, St. Thomas's Hospital; Edward Michael William Hearn and George Stafford Ward, London Hospital; Clayton Alexander Francis Hingston and Henry Vernon Swindale, Middlesex Hospital; William Johnson, Guy's Hospital and Mr. Cooke's School of Anatomy and Physiology; Kenneth Vincent Trubshaw and Frank Cordeux Wetherell, Guy's Hospital; and James Ward Lawton, Charing-cross Hospital.

Twenty-one gentlemen were referred back to their professional studies for three months.

Wednesday, Oct. 13th:

Anatomy and Physiology.—Hector Alfred Colwell, Henry Norman Marrett, Edward Vaughan Lindsey, Robert Cuiverwell Bowden, Digby Sayer Sandiland, and Reginald Bigg, St. Bartholomew's Hospital; Charles Montague Heanley, St. George's Hospital; Joseph Clement Justinian da Silva, Arthur Cedric Lewis, and Hugh Arthur Higgins, Guy's Hospital; Henry Brookes Carr, Firth College, Sheffield, and Guy's Hospital; Gerard Lyne Parsons, Westminster Hospital and Mr. Cooke's School of Anatomy and Physiology; Wilfred Alexander Steen, Gerald Griffin, Eric McLeod Perkins, and Frank Challans, London Hospital; and Ernest Henry Hogg, Middlesex Hospital.

Nineteen gentlemen were referred back to their professional studies for three months.

Thursday, Oct. 14th:

Anatomy and Physiology.—Edward Percival Mitchell, Guy's Hospital; Percy Douglas Hunter and Herbert Vale Bagshawe, Guy's Hospital and Mr. Cooke's School of Anatomy and Physiology; Cecil Hughes Francis-Williams, St. George's Hospital; Walter Seymour Armstrong, St. George's Hospital and Mr. Cooke's School of Anatomy and Physiology; Francis Goding Bowen, George Orissa Taylor, and Thomas Frederick Gisborne Mayer, London Hospital; Hugh Edward Drummond Lloyd, Charles Fisher, and John Ellis Griffith, St. Bartholomew's Hospital; Francisco José Gómez, King's College, London; Cecil Irving Grabham and Edward Henry Bullen, St. Mary's Hospital; Edward Cecil Foster, University College, London; George Osborne Hughes, University of Virginia and Mr. Cooke's School of Anatomy and Physiology; and Robert James Johnstone, Queen's College, Belfast.

Anatomy only.—Elijah Richard Lockwood Thomas, London Hospital; Orme Sterling Kellett, London Hospital and Mr. Cooke's School of Anatomy and Physiology; and Frederick Aylmer Hort, Middlesex Hospital and Mr. Cooke's School of Anatomy and Physiology.

Physiology only.—Alexander Farrington, St. Bartholomew's Hospital; Henry Joseph Butler, St. George's Hospital; and Herbert Charles, Middlesex Hospital.

Five gentlemen were referred back to their professional studies in both subjects, and two in Physiology only for three months.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen, having passed the necessary examinations and having conformed to the by-laws and regulations, have been admitted Members of the College:—

Welch, Walter Barrows, L.S.A. Lond., St. Bartholomew's Hospital.
Wood, Charles Rawdon, M.B. and B.S. Durh., University of Durham and University College Hospital.

From the report of the council about to be issued to the Fellows and Members of the College it appears that the names of 34 Fellows and 230 Members have been removed from the list published in the College Calendar during the past collegiate year in consequence of death. During the past year the supply of new books and periodicals has been well kept up. Several old books have been presented by Mr. R. H. Lucy, F.R.C.S. Eng. Mr. Longmore has presented an engraving of Bransby Cooper which had formerly belonged to Sir Thomas Longmore. During the past year the library has been open on 271 days, and the number of readers has been 10,965.

AT a meeting of the Lincoln City Council held on Oct. 15th it was agreed that for the coming year Dr. John T. Collier should be mayor. The mayor-elect is a representative of the Middle Ward in the City Council.

NEW UNIVERSITY HALL AT BANGOR.—The new county school for girls, built at a cost of £2320, and the university hall for women students, upon which £5200 have been expended, were opened at Bangor on Oct. 9th, when addresses were delivered by Dr. Isambard Owen, Mr. Acland, M.P., and Mr. T. E. Ellis, M.P.

BRISTOL CONVALESCENT HOME.—The Mayor of Bristol has received £21,500 towards the proposed Convalescent Home for Bristol. This, with the conditional promises, makes a total of £64,500. The sum of £5500 now remains to be subscribed in order to make up the £70,000 required for the institution, and this amount must be received by Dec. 1st if the conditional subscriptions are to be secured. The fund has received such support from the citizens that it is confidently hoped the amount will be forthcoming.

A WOKING druggist was summoned at Guildford last week by the Surrey County Council for selling "Gregory powder" which was not of the nature and substance asked for by the purchaser. A label on the package stated that it was prepared according to the original recipe of Dr. Gregory. As a matter of fact carbonate of magnesia had been substituted for the more expensive oxide. For the defence it was stated that the carbonate had the same effect therapeutically as the oxide, and medical evidence was called to prove this. The Bench held that the article sold was not to the detriment of the purchaser and dismissed the case.

FOREIGN UNIVERSITY INTELLIGENCE.—*Budapest:* The charge of the Surgical Clinic has been temporarily taken over by Professor Dollinger in place of the late Professor Kovács.—*Cracow:* Dr. Obalinski has been appointed Professor of Surgery.—*Königsberg:* Dr. Ernst Leutert has qualified as *privat-docent* in Otology.—*Lemberg:* Dr. Rydygier, of Cracow, has been appointed to the chair of Surgery.—*Naples:* Dr. Donato Greco has qualified as *privat-docent* in Dermatology.—*Zürich:* Dr. Justus Gaule, Professor of Physiology, has been obliged to take leave of absence on account of the state of his health, and Dr. von Frey has been invited to go from Leipzig to supply his place.

UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.—The medical school at the University College was opened on Oct. 4th, an increased number of students enrolling in the books. This session the teaching staff has been increased by the appointment of Dr. Alfred William Sheen as demonstrator of anatomy, and of Mr. S. C. Mahalanobis, B.Sc., as demonstrator of physiology. Professor Francis Dixon commenced his first course of winter lectures at the College, and he has to face the difficult task of refilling the anatomical museum. The specimens being the private property of the late occupant of the chair have for the most part been removed, but will be more than replaced from funds placed at the disposal of the College by the generosity of Professor Alfred Hughes. In the physiological department a large work bench has been constructed at which a class of students may pursue their studies in experimental physiology; it is provided with a shaft run from an electro-motor, from which a series of revolving drums can be run independently of each other within a wide limit of speed. The following students of medicine have obtained entrance scholarships and exhibitions: William S. Hughes (Entrance Scholarship), Joseph William Evans (Glamorgan Free Studentship), David Morgan Hughes (Monmouth Free Studentship), and Arthur Edward Fiddian (Cardiff Free Studentship). A meeting of the council of this College was held in Cardiff on Oct. 13th, under the presidency of Lord Tredegar. A cordial vote of thanks was unanimously passed to Professor Hughes (the late professor of anatomy) for his gift of £350 and a series of illustrations for the anatomical museum of the College. It was stated that the Carmarthen County Council had granted a science scholarship to be tenable at the College. The Principal said that the number of students at the end of last session was 431.

THE Worshipful Company of Mercers have sent a donation of 50 guineas to the Royal Chest Hospital, City-road, E.C.

UNIVERSITY COLLEGE, BRISTOL.—The Council of University College, Bristol, have accepted the offer of Her Majesty's Commissioners for the Exhibition of 1851 to place at their disposal next year a science scholarship of the annual value of £150 tenable for two years.

MEDICAL MAGISTRATES.—Mr. J. Comyns Leach, M.D. Durh., B.Sc. Lond., of Sturminster Newton, coroner for North Dorset, has been appointed to the Commission of the Peace for the County of Dorset on the nomination of the Lord-Lieutenant.—On the recommendation of the Lord-Lieutenant of Carnarvonshire, Dr. R. Langford Jones, of Bangor, has been placed on the Commission of the Peace for the county.

EDINBURGH GRADUATES' DINNER AT BIRMINGHAM.—On Oct. 14th a large number of the graduates in medicine of the University of Edinburgh residing in the Midlands dined together at the Grand Hotel, Birmingham. Dr. Robert Saundby presided, and Dr. Thomas Chavasse occupied the vice-chair. In every way the dinner was a most enjoyable one. The toast of the evening, "The University of Edinburgh," was proposed by Dr. Saundby and drunk with enthusiasm. It was unanimously decided to form a "Midland Club of Edinburgh Graduates," the members of which will be asked to meet and dine together at least once a year. A committee, with Mr. Christopher Martin and Dr. Douglas Stanley as honorary secretaries, was appointed to make the necessary arrangements. It is hoped that not only all the medical graduates, but also those of the other faculties residing in the Midlands, will join the club which has been so successfully inaugurated.

SOCIETY FOR THE STUDY OF INEBRIETY.—At a meeting of this society held on Oct. 14th Surgeon-Major G. K. Poole, M.D. Erlang, read a paper on the Etiology of Inebriety. He presented the opinions of a large number of clergy, laymen, and medical practitioners, and also of others. With the exception of that of one medical man the testimony was affirmative of heredity as a predominant factor, and of business and domestic distress and worry as causative in a substantial proportion. Some non-medical reporters attributed up to 50 per cent. as being consequent on "doctors' orders," but Dr. Hare, Dr. Morton, Mr. Aydon Smith, Dr. Longhurst, Dr. Paramore, and the President repudiated the accusations, the President stating that not more than ½ per cent. of over 2000 cases could he trace to anything of the kind. Dr. W. Bode, of Hildesheim, stated that in January, 1900, the new German Code would come into operation for interdiction and compulsory dealing with inebriates.

FREEMASONRY.—*The Rahere Lodge No. 2546*: A meeting of the Rahere Lodge was held at Frascati's Restaurant on Oct. 12th, Bro. W. J. Walsham, W.M., in the chair. Bros. Neill and Perram were admitted to the third degree in Freemasonry; Bros. Haines, Sargant, Matthews, Miles, and Shewell to the second; and Messrs. Ellis and Auden and Surgeon Folliot, R.N., were initiated. Bro. C. O'B. Harding, of Eastbourne, and Bro. P. B. T. Stubbs, of Wynberg, Cape Town, were elected joining members. A resolution of condolence was proposed by Bro. Keogh Murphy, seconded by Bro. Valerie, and passed unanimously, to Mrs. Forman on the loss of her son, Bro. G. H. Forman, wrecked in the *Aden*. A vote of one guinea to the Home for the Dying was confirmed. Fifty-one brethren with their guests afterwards dined together.—*Æsculapius Lodge*: The seventh installation meeting of the Æsculapius Lodge was held at the Café Royal, Regent-street, on Oct. 13th, the Master, Dr. Thomas Dutton, being in the chair. Mr. Edward H. Ezard, M.D., D.Sc. Edin., was installed Master for the ensuing year. Mr. G. Danford Thomas, M.D. Brux., coroner for Central London, was re-elected treasurer. Mr. Thomas Dutton, M.D. Durh., M.R.C.P. Edin., was appointed secretary. The auditors brought in the report of the audit committee, which showed a very good balance in the treasurer's hands. Surgeon-Major E. W. Reilly, L.R.C.P., L.R.C.S. Edin., was unanimously elected a joining member. A large number of members and visitors were present, forty-five of whom afterwards dined together and spent a very pleasant social evening.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—The following entrence scholarships have been awarded:—Entrance Scholarships in Arts, of the value of £50: Armin Gascoigne Vavasour Elder, Edward William Dewey, and George Arthur Jones (Pauline Scholar). Entrance Scholarships in Science, of the value of £85: Edmund de la Fosse Bond, B.A., of Keble College, Oxford, Norman J. McCaskie, B.A., of Caius College, Cambridge, and Charles John Nepean Longridge, of Owens College, Manchester.

A DEPUTATION of the Corporate and Medical Reform Committee was received on Wednesday afternoon by the President and Council of the British Medical Association, the object of the deputation being to invite the British Medical Association to take the lead in organising concerted action in favour of a certain reform programme. The deputation consisted of Dr. Hugh Woods, Dr. T. Granville Hockridge, Dr. C. Milner Browne, Dr. J. Wheeler O'Pryon, Mr. A. S. Morton, and Mr. R. B. Anderson, and was introduced by Mr. George Brown.

BRITISH MEDICAL BENEVOLENT FUND.—The British Medical Benevolent Fund has received from the executors of the late Dr. Robert Gee, of Liverpool, a bequest of £200, less duty, to be invested and added to the capital, the dividends on which are appropriated to the payment of the 107 annuitants now on the books. We regret to hear that the other branch of the fund—the Grants department—is much in need of further subscriptions or donations to enable the committee to relieve the many urgent cases consideration of which, at their last monthly meeting, they were obliged to postpone for want of funds.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—A quarterly court of the directors of this society was held on Oct. 13th, Dr. Pollock, vice-president, being in the chair. A new member was elected, and the deaths of four were reported. Two widows in receipt of grants had died since the last court; a fresh application for assistance from a widow for herself and daughter was read and grants were made at the rate of £50 per annum to the widow and £12 per annum to the daughter. It was resolved to distribute at the next meeting a sum of £1167 among the 48 widows, 12 orphans, and 6 recipients from the Copeland Fund. The treasurer recommended that a present of £8 should be made at Christmas to each widow, £3 to each orphan, and £5 each to those on the Copeland Fund, in all £434. The treasurer's recommendation was adopted.

SOUTH-WEST LONDON MEDICAL SOCIETY.—The first meeting of the session of this society was held at the Infirmary, Wandsworth, on Oct. 13th, under the presidency of Mr. T. A. Ives Howell. Interesting papers were read and cases shown by Dr. Smyth and Mr. Stares, medical officers of the infirmary. Dr. Smyth gave an outline of the Serum Treatment of Disease, and showed a case of Tetanus in a woman, aged sixty years, which had been successfully treated by antitoxin; also a case of Congenital Pulmonary Stenosis in a child aged four years, and a post-mortem specimen from a case of Malignant Disease of the Œsophagus penetrating into the Aorta. Mr. Stares read a practical paper on the Use of Peroxide of Hydrogen as a Dressing for Ulcers, &c.; he showed a case of advanced Progressive Muscular Atrophy, and also photographs of a case of Acromegaly, with post-mortem notes. There was, in addition, an excellent demonstration of various micro-organisms and cultures which was much appreciated. The meeting closed with votes of thanks to Mr. Neal, by whose courtesy the resources of the infirmary were placed at the disposal of the society.

PATHOLOGICAL SOCIETY OF MANCHESTER.—This society held its annual meeting on Oct. 13th, Dr. T. Harris, President, being in the chair. The officers for the ensuing year were elected, as published in our last issue, after which the time of the meeting was devoted to the consideration of card specimens. The following preparations were shown:—Dr. Ashby: (1) Congenital Syphilitic Disease of Brain; and (2) Mediastinitis. Mr. S. Bishop: Preparations illustrating Abdominal Lesions. Dr. Brooke and Mr. Lancashire: Photographs of Diseases of the Skin. Dr. Burgess: Collection of Sequestra. Professor Delépine: A series of specimens illustrating the Pathogenic Effects of Bad Milk. Dr. Dockray: (1) Experimental Calcification of Kidney; and

(2) Nephritis following Poisoning by Mercury. Dr. Fox Edwards: Specimens and Drawings of Morbid Blood. Mr. T. Jones: Ruptured Bladder showing Surgical Repair. Dr. Lea: Gynæcological Specimens. Dr. Ledward: Series of Photographs. Dr. Milligan: Microscopical Preparations of Nasal, Laryngeal, and Aural Growths. Dr. Moore: Specimens illustrating forms of Lardaceous Disease. Mr. Southam: Series of Drawings illustrating Diseases of the Bladder. Dr. Peter Thompson: Ruptured Aneurysm of Left Common Iliac Artery.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, King William-street, Strand, London.

The Roentgen Rays in Medical Work. By D. Walsh, M.D. Edin. with an Introductory Section upon Electrical Apparatus and Methods. By J. B. Greenhill. 1897. Price 6s. net.

Heart Disease: with Special Reference to Prognosis and Treatment. By Sir Wm. H. Broadbent, Bart., M.D., F.R.S., F.R.C.P., and John F. H. Broadbent, M.A., M.D. Oxon., M.R.C.P. 1897. Price 10s. 6d.

The Winter Meteorology of Egypt, and its Influence on Disease. By H. E. L. Canney, M.D. Lond. Reprint, 1897. Price 3s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, London, and J. MENZIES AND CO., Edinburgh.

The Principles and Practice of Veterinary Medicine. By W. Williams, F.R.C.V.S., F.R.S.E. Eighth Edition. 1897.

BLACKIE AND SON, Old Bailey, London.

Adventures in Toyland. By Edith King-Hall. Illustrated. Price 5s.

Red Apple and Silver Bells: a Book of Verse for Children of all Ages. By Hamish Hendry. Illustrated. Price 6s.

With Moore at Corunna. By G. A. Henty. Illustrated. 1898. Price 6s.

Lords of the World: a Story of the Fall of Carthage and Corinth. By Rev. Alfred J. Church. Illustrated. 1898. Price 6s.

Just Forty Winks. By Hamish Hendry. Illustrated. Price 5s.

CARRÉ, G., ET C. NAUD, Paris.

L'Agglutination des Microbes. Par Dr. R. Bensaudé. 1897.

CARVETH, J. A., AND CO., Toronto, Canada.

Text-book of Medical and Surgical Gynæcology. By R. W. Garrett, M.A., M.D. Illustrated. 1897.

CASSELL AND COMPANY, London.

Clinical Methods. By R. Hutchison, M.D., M.R.C.P., and H. Rainy, M.A., F.R.C.P. Edin., F.R.S.E. Illustrated. 1897. Price 9s.

CLOWES AND SONS, Charing-cross, London, S.W.

Sanitation and Health. By Brig.-General R. C. Hart, V.C., C.B., R.E., revised by Brigade-Surgeon-Lieutenant-Colonel T. H. Hendley, C.I.E., L.R.C.P., M.R.C.S., authorised by the War Office for use in all Army Schools. Fourth Edition. 1897. Price 1s. 6d.

GRIFFIN, C., AND COMPY., Exeter-street, Strand, London.

Clinical Diagnosis. By Dr. Rudolf v. Jaksch, translated from the fourth German edition, by James Cagney, M.A., M.D. Third Edition. Illustrated. 1897. Price 25s.

JARROLD AND SONS, Warwick-lane, London, E.C.

The Ritual of Health, for the Grown. By H. Cooper Pattin. Third Edition. 1897. Price 1s.

KIMPTON, HENRY, High Holborn, London.

A System of Practical Medicine by American Authors. Edited by A. L. Loomis, M.D., LL.D., and W. G. Thompson, M.D. Vol. I. Infectious Diseases. Illustrated. 1897. Price 25s. net.

A Text-book of Practical Therapeutics. By Hobart A. Hare, M.D., B.Sc. Sixth Edition. 1897. Price 21s. net.

Practical Diagnosis: the Use of Symptoms in the Diagnosis of Disease. Second Edition. By H. A. Hare. Illustrated. 1897. Price 21s. net.

LEWIS, H. K., Gower-street, London, W.C.

A Handbook of Therapeutics. By S. Ringer, M.D., F.R.S., and H. Sainsbury, M.D., F.R.C.P. Thirteenth Edition. 1897. Price 16s.

LIPPINCOTT, J. B., COMPY., Henrietta-street, Covent-garden, London.

The Normal and Pathological Circulation in the Central Nervous System (Myel-Encephalon). Original studies. By William Browning, Ph.B., M.D. 1897. Price 7s. 6d.

Appendicitis and its Surgical Treatment; with a Report of Seventy-nve Operated Cases. By Herman Mynter, M.D. (Copenhagen). 1897. Price 10s. 6d.

LONGMANS, GREEN, AND CO., Paternoster-row, London.

The Principles of Chemistry. By D. Mendeléeff. Translated from the Russian (Sixth Edition) by Geo. Kamensky, A.R.S.M. Edited by T. A. Lawson, B.Sc., Ph.D. Vols. I. and II. 1897. Price 36s.

The Dwelling House. By G. V. Poore, M.D., F.R.C.P. Illustrated. 1897. Price 3s. 6d.

Anatomy: Descriptive and Surgical. By H. Gray, F.R.S. Illustrated. Fourteenth Edition. Edited by T. Pickering Pick. 1897. Price 28s.

Darwin and after Darwin. By the late Geo. J. Romanes, M.A., LL.D., F.R.S. Vol. III. 1897. Price 5s.

MACMILLAN AND CO., London.

Perityphlitis and its Varieties. By F. Treves, F.R.C.S. (reprint). 1897. Price 2s. 6d. net.

Practitioner's Handbook of Treatment, or the Principles of Therapeutics. By the late J. M. Fothergill, M.D., M.R.C.P. Fourth Edition. Edited by Wm. Murrell, M.D., F.R.C.P. 1897. Price 15s. net.

MALOUIN, A., Paris.

La Formule Médicale. Par E. Dupuy. 1897.

MURRAY, JOHN, Albemarle-street, London.

Under the Red Crescent: Adventures of an English Surgeon with the Turkish Army at Plevna and Erzeroum, 1877-1878. Related by Chas. S. Ryan, M.B., C.M. Edin., in association with his friend John Sandes, B.A. Oxon., with portrait and maps. 1897. Price 9s.

NICHOLS AND CO., Oxford-street, London.

The German Nature Cure and How to Practise it. By J. Aidall. Illustrated. 1897. Price 3s. 6d.

REEVES, WM., Fleet-street, London, E.C.

Humanitarian Essays: being Vol. III. of "Cruelties of Civilisation." Edited by H. S. Salt. 1897. Price 1s.

SCOTT, WALTER, Paternoster-square, London, E.C.

Sleep: Its Physiology, Pathology, Hygiene, and Psychology. By Marie de Manaceine, St. Petersburg. Illustrated. 1897. Price 3s. 6d.

SIMPKIN, MARSHALL, AND CO., Stationers' Hall-court London, E.C.

Localisation of Headache and Sick Headache, Indicating their Origin, Pathology, and Treatment. By H. B. Hewetson, F.L.S. Illustrated. 1897.

SMITH, ELDER, AND CO., Waterloo-place, London, S.W.

Spinal Caries (Spondylitis, or Pott's Disease of the Spinal Column). By Noble Smith, F.R.C.S. Edin., L.R.C.P. Lond. Second Edition 1897. Price 5s.

Transactions of the Pathological Society of London. Vol. XLVIII. 1897.

SMITH, JOHN, AND SON, Glasgow.

Proceedings of the Philosophical Society of Glasgow. 1896-97. Vol. XXVIII. 1897. Price 10s. 6d.

SWAN SONNENSCHEIN AND CO., Paternoster-square, London.

Children under the Poor-law: their Education, Training, and After-care. By W. Chance, M.A. 1897. Price 7s. 6d.

THE F. A. DAVIS COMPANY, Philadelphia.

An Epitome of the History of Medicine. By Roswell Park, A.M., M.D. Illustrated. 1897.

THE ROXBURGHE PRESS, Victoria-street, Westminster.

Young Men's Guide and Medical Companion. By Dr. Gangadin Fifth Edition. Eleventh Thousand. Price 2s. 6d.

THE SCIENTIFIC PRESS, Southampton-street, Strand, London.

A Manual of Hygiene for Students and Nurses. By J. Glaister, M.D. Illustrated. 1897.

Fevers and Infectious Diseases: Their Nursing and Practical Management. By Wm. Harding, M.D., M.R.C.P. 1897. Price 1s.

UNWIN, T. F., Paternoster-square, London, E.C.

John Hunter: Man of Science and Surgeon. (1728-1793.) By Stephen Paget, with Introduction by Sir James Paget. 1897. Price 3s. 6d.

VOSS, LEOPOLD, Hamburg and Leipzig.

Taeraple der Hautkrankheiten. Von Dr. L. Leistikow. Mit einem Vorwort von Dr. P. G. Unna. 1897. Price 6s.

WARWICK BROS. AND RUTTER, Front-street West, Toronto.

Fifteenth Annual Report of the Provincial Board of Health of Ontario for the Year 1896.

Kroll's Stereoskopische Bilder für Schielende, von Dr. P. Perlia (Leopold Voss, Hamburg).—The Commercial Uses of Coal Gas, by Thos. Fletcher, F.C.S. (Fletcher, Russell and Co., Warrington, Manchester, and London).

Appointments.

Successful Applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

COMYNS, BERKELEY, M.B., B.C. Cantab., M.R.C.P., M.R.C.S., has been appointed an Out-patient Physician to the Chelsea Hospital for Women.

DRINKWATER, H., M.D. Edin., M.R.C.S., has been appointed Medical Officer for the Westminster Colliery Sick Relief Committee, vice C. Davies.

ECCLES, C. H., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Nafferton Sanitary District, vice H. J. Slane, resigned.

EVANS, JOHN J., M.B., M.S. Edin., M.R.C.S. Eng., has been appointed Resident Surgical Officer to the Birmingham and Midland Eye Hospital.

GARDNER, H. BELLAMY, M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Anæsthetist to the National Orthopædic Hospital, Great Portland-street.

GRAY, A. A., M.D. Glasg., has been appointed an Assistant Pathologist to the Cancer Hospital, Glasgow.

HARRIS, F. D., M.R.C.S., L.S.A., has been appointed Medical Officer of Health for the Borough of St. Helen's, vice J. Robertson, resigned.

KENYON, G. A., M.B. Lond., L.R.C.P., M.R.C.S., has been appointed Medical Officer of Health for the Malpas Rural Sanitary District, vice W. N. Thursfield, resigned.

LECHE, A., L.R.C.P. Edin., M.R.C.S., has been appointed Medical Officer of Health by the Axbridge Rural District Council.

MADDEVER, J. C., M.D. Glasg., has been re-appointed Medical Officer of Health by the Brownhills Urban District Council.

MARTIN, F. W., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health for the Borough of Brighouse, vice M. Young, resigned.

MIVART, F. ST. GEORGE, M.D. Louvain, F.R.C.S., L.R.C.P. Edin., M.R.C.S., has been appointed a Medical Inspector of the Local Government Board, vice F. W. Barry, deceased.

MOORE, E. COTTEW, M.B., M.S. Edin., has been appointed Senior House Surgeon to the Birmingham and Midland Eye Hospital.

PARRY, GEORGE HEARN, M.B., C.M. Edin., has been appointed Resident Physician to the Victoria Hospital for Consumption and Diseases of the Chest, Craigleith, Edinburgh, and also Non-resident Clinical Clerk to the Observation Ward, Royal Infirmary, Edinburgh.

POTTER, E. FURNISS, M.D. Brux., M.R.C.S., L.R.C.P., has been appointed Assistant Surgeon to the London Throat Hospital.

SWINDALE, JOHN ASTON, M.B., B.S. Durh., has been appointed Assistant House Surgeon to the Guest Hospital, Dudley, vice H. A. Belbin, resigned.

THOMPSON, H. E., M.B. Lond., M.R.C.S. Eng., has been appointed Junior House Surgeon to the Birmingham and Midland Eye Hospital.

TRIPP, C. L. H., L.R.C.P. Lond., M.R.C.S., has been appointed a Medical Officer to the Dawlish Cottage Hospital.

WAGGETT, ERNEST, M.B., has been appointed Assistant Surgeon to the London Throat Hospital.

WEBB, C. C., M.B., B.C. Cantab., has been appointed Medical Officer for the Second Sanitary District of the Mansfield Union.

WIGIN, G. W., M.R.C.S., L.S.A., has been appointed Medical Officer of Health by the Methley Urban District Council.

WOOD, J. H., M.B. Lond., M.R.C.S., has been appointed House Surgeon to the Stockton and Thornaby Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRIDGWATER INFIRMARY.—House Surgeon. Salary £80 per annum, with board and residence.

CHELTENHAM GENERAL HOSPITAL.—Junior House Surgeon, unmarried. Salary £40 per annum, with board and apartments.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY, Chesterfield.—Junior House Surgeon and Dispenser. Salary £50 per annum, with board, apartments, and laundress.

CHESTER GENERAL INFIRMARY.—Visiting Surgeon for six months. Salary at the rate of £90 per annum, with residence and maintenance in the house.

CONSUMPTION HOSPITAL AND ORPHAN HOMES OF SCOTLAND, Bridge of Weir.—Resident Medical Officer. Salary £80 per annum, with furnished apartments, board, &c. Applications to the Hon. Secretary, 194, St. Vincent-street, Glasgow.

CORPORATION OF CALCUTTA, Bengal, India.—Health Officer for the town of Calcutta for five years. Salary not less than 1200 rupees and not more than 1500 rupees a month. The appointment is subject to specified conditions. Applications to the Secretary to the Corporation, Calcutta.

DURHAM COUNTY ASYLUM.—Pathologist and Assistant Medical Officer. Salary £150. Applications to Dr. Smith, Durham County Asylum, Winterton, Ferryhill.

GENERAL INFIRMARY AND DISPENSARY, Doncaster.—In-door Dispenser and Assistant to the House Surgeon. Board, lodging, and washing provided.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, Bloomsbury, London.—House Physician for six months, unmarried. Salary £20, with board and residence in the hospital.

LINNEAN SOCIETY OF NEW SOUTH WALES, Sydney.—Macleay Bacteriologist. Salary £400 per annum. Applications to Dulan and Co., 37, Soho-square, London.

LIVERPOOL DISPENSARIES, 34, Moorfields, Liverpool.—Assistant Surgeon, unmarried. Salary £80 for the first year, and £90 per annum afterwards, with apartments, board, and attendance.

LIVERPOOL STANLEY HOSPITAL.—Junior House Surgeon. Salary £70 per annum, with board, residence, and washing.

NORTH-WEST LONDON HOSPITAL, Kentish Town-road.—Resident Medical Officer and Assistant Resident Medical Officer for six months each. Salary at the rate of £50 per annum for the senior post.

ROYAL ISLE OF WIGHT INFIRMARY AND COUNTY HOSPITAL, Ryde.—House Surgeon, and to act as Secretary. Salary £60 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, Moorfields.—Senior House Surgeon.

ROYAL PORTSMOUTH HOSPITAL.—Assistant House Surgeon for six months. Board and residence, and an honorarium of £15 15s.

SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Board, lodging, and washing provided.

SEAMEN'S HOSPITAL SOCIETY, "DREADNOUGHT," Greenwich, S.E.—Surgeon for Dispensary, 51, East India Dock-road. Salary £63. House Surgeon for "Dreadnought" Hospital, Greenwich. Salary £39 per annum, with board and residence. Junior House Surgeon for the Branch Hospital, Royal Albert Dock, E. Salary £50 per annum, with board and residence. Applications to the Secretary, Greenwich.

ST. GEORGE'S UNION, London.—Second Assistant Medical Officer at the Infirmary, Fulham-road, S.W., for one year. Salary £50, with board, residence, and washing. Applications to Dr. H. W. Webster at the Infirmary.

ST. THOMAS'S HOSPITAL, London, S.E.—Physician.

WEST HAM HOSPITAL, Stratford, E.—Junior House Surgeon for one year. Salary £50 per annum, with board, residence, &c.

WEST LONDON HOSPITAL, Hammersmith-road.—Assistant Physician.

WESTERN GENERAL DISPENSARY, Marylebone-road, London.—Dispenser. Salary £120 per annum.

WREXHAM INFIRMARY AND DISPENSARY.—House Surgeon. Salary £80 per annum, with furnished rooms, board, gas, coal, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

ABRAM.—On Oct. 12th, at 106, Loudon-road, Reading, the wife of G. Stewart Abram, M.B. Cantab., M.R.C.S. Eng., of a daughter.

ALDRIDGE.—On Oct. 15th, at Hamilton House, Southampton, the wife of Norman Aldridge, M.B., C.M. Edin., of a daughter.

ARMSTRONG.—On Oct. 13th, at Southgate, the wife of A. J. M. Armstrong, M.R.C.S. Eng., L.R.C.P. Edin., of a son.

DALY.—On Oct. 16th, at Cornfield-road, Eastbourne, the wife of W. J. Daly, M.B., C.M. Glasg., of a son.

FORBES.—On Oct. 9th, at "Drumminor," Calverley Park, Tunbridge Wells, Kent, the wife of Norman Hay Forbes, of Forbes, F.R.C.S. (Exam.) Edin., L.R.C.P. Lond., M.R.C.S. Eng., of a daughter (Eilidh).

KENNEDY.—On Oct. 18th, at Burke House, Beaconsfield, Bucks, the wife of William Willoughby Kennedy, M.A., M.B. Lond., M.R.C.S., D.P.H. Camb., of a daughter.

TURNEY.—On Oct. 19th, at Portland-place, W., the wife of H. G. Turney, M.B. Oxon., F.R.C.S., of a son.

MARRIAGES.

CROWLY—SPAIN.—On Oct. 14th, at the Church of the Sacred Heart Quex-road, N.W., Daniel Crowly, M.D., Coroner, Loughrea, Co. Galway, Ireland, to Agnes Mary, second daughter of the late Lewis Spain, of Oaklands, West-end-lane, West Hampstead.

DAVOREN—BROWN.—On Oct. 14th, at St. Matthew's, Redhill, John Davoren, L.R.C.P., L.R.C.S.I., of Streatham, S.W., to Laura Madeline, eldest daughter of the late Charles R. Brown, M.D., of Eastbourne and Beckenham, Kent.

FRANCIS—USHER.—On Oct. 14th, at St. Mary's, Finchley, Harvey Francis, M.B., son of the late Swinford Francis, to Jessie, daughter of Thomas C. Usher, of Woodstock House, Hendon.

GRAY—ORR.—On Sept. 16th, at Curepipe, Mauritius, Surgeon-Captain W. Lewis Gray, son of the late Dr. Gray, of Selby, to Janet Mary Orr, daughter of the late Thomas Orr, of London.

MUSGRAVE—PRENTIS.—On Oct. 16th, at All Saints', Kensington-park, Cecil Musgrave, M.D., of Cromer, elder surviving son of the late Colonel Walter Musgrave, formerly of the Cape Mounted Rifles, H.M.'s 81st Regiment, and of the 15th Bengal Lancers, and the 5th Bengal Cavalry, to Ethel Combe, only daughter of the late Surgeon-Major Charles Prentis, B.M.S., and of Mrs. C. Prentis, 29, Colville-terrace, W.

PEAKE—JAMES.—On Oct. 14th, at the parish church, Hendon, by the Rev. C. Hose, William Harland Peake, M.D., B.S., of Marden, Kent, to Etheline, youngest daughter of the late Robert James, Esq., and Mrs. James, of Hendon, Middlesex.

WATSON—CRICHTON.—On Oct. 13th, at Westbourne Free Church, Glasgow, Alexander Oswald Cowan Watson, Surgeon-Captain A.M.S., to Marion Macfarlane, eldest daughter of George Crichton, Montgomerie-crescent, Glasgow.

DEATHS.

BARRY.—On Oct. 12th, suddenly, at the Grand Hotel, Birmingham, aged 46, Frederick William Barry, D.Sc., F.R.S.E., of Tower House, Down, Kent, Chief Medical Inspector of Local Government Board, London.

BRADLEY.—On Oct. 18th, at Philbeach-gardens, S.W., Richard Holland Bradley, M.D., F.R.C.S., aged 77 years.

CAMERON.—On Oct. 20th, at Redcliffe-square, S.W., Hugh Cameron, L.R.C.S. Edin., late of 43, Hertford-street, Mayfair, in his 88th year.

CORNISH.—On Oct. 19th, at Corvill, Shelley-road, Worthing, Surgeon-General William Robert Cornish, C.I.E., F.R.C.S., Honorary Physician to the Queen, and late Madras Army, aged 70 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), Westminster (2 P.M.).

TUESDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.).

WEDNESDAY (27th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), ing's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.).

THURSDAY (28th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.).

FRIDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.).

SATURDAY (30th).—Royal Free (9 A.M. and 2 P.M.), Middlesex, (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (25th).—MEDICAL SOCIETY OF LONDON.—8.30 P.M. Dr. T. Churton (Leeds): Some Observations on the Localising Factors in Rheumatism and Chorea, with cases.

TUESDAY (26th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Demonstration of Microscopic Specimens showing the Infection of the Capillaries of the Brain, and Illustrating the Pathological Changes in the Liver which are caused by the Debris of the Parasites. 8.30 P.M. Papers:—Dr. S. Phillips: A Case of Calcareous Metamorphosis of Tracheal Glands, Formation of Mediastinal Abscess and Bronchial Fistula, subsequent Perforation of the Arch of the Aorta, with long-continued Hæmoptysis and Death.—Dr. G. Thin: A further Contribution towards the Pathology of the Pernicious Malarial Fevers of Sierra Leone and our knowledge of the Parasite with which they are Associated.

WEDNESDAY (27th).—DERMATOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND (20, Hanover-square, W.).—4.30 P.M Council Meeting. 5 P.M. Cases and Papers.

HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—8.30 P.M. Clinical Evening. Cases:—Dr. Cotman: Disease of the Ankle.—Dr. F. J. Smith: Osteitis Deformans.—Sir H. Beevor: Congenital Heart Disease. Patients will be shown by Dr. J. H. Sequeira and others.

THURSDAY (28th).—NEUROLOGICAL SOCIETY OF LONDON (11, Chandos-street, W.).—8.30 P.M. Pathological Meeting. Dr. S. Brown and Dr. A. Meyer (communicated by Dr. J. A. Ormerod): Morbid Anatomy in a case of Hereditary Ataxy of the type described by Sanger Brown.—Dr. S. Gee and Dr. H. H. Tooth: A Case of Hæmorrhage in the Region of the Pons Varolii almost entirely on the Right Side.—Dr. W. A. Turner: Symmetrical Softening of the Pyramids and Interolivary Strata.—Dr. F. E. Batten: The Effect of Marchi's Fluid on Nervous Tissue which has undergone Post-mortem Change.—Dr. J. Taylor and Mr. C. A. Ballance: A Case of Tumour of the Right Lateral Lobe of the Cerebellum.—Dr. R. Russell: Contributions to the Study of some of the Tracts in the Spinal Cord.

FRIDAY (29th).—BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION (11, Chandos-st., Cavendish-sq., W.).—3.15 P.M. Exhibition of Throat and Nose Cases by Dr. Pegler, Mr. Wilkin, the President, and others. Papers:—Dr. Treallian: Throat Lesions in Enteric Fever.—Dr. Pegler: Post-septal Lymphoma (with microscopical preparations).—The President: Some Lines of Progress in Laryngology, Rhinology, and Otology (Presidential Address): Exhibition of Ear Cases.—Mr. F. Marsh: Notes of Five Cases of Cerebral Abscess due to Ear Disease.—Mr. M. Collier: Nasal Stenosis and Tinnitus.—Mr. W. Wingrave: Tuberculous Disease of Middle Ear complicated by Optic Neuritis.—Mr. St. G. Reid: Traumatic Rupture of Tympanic Membrane.

LECTURES, ADDRESSES, DEMONSTRATIONS, ETC.

MONDAY (25th).—LONDON POST-GRADUATE COURSE.—London Throat Hospital, Gt. Portland-st., W., 8 P.M., Dr. G. Stoker: Chronic Glandular Disease of the Nose and Naso-Pharynx.

TUESDAY (26th).—LONDON POST-GRADUATE COURSE.—Bethlem Hospital, 2 P.M., Dr. Craig: Stupor; Katatonia; Dementia and Senile Insanity.—Hospital for Skin Diseases, Blackfriars, 4.30 P.M., Dr. Abraham: Alopecia.

HOSPITAL FOR NERVOUS DISEASES (73, Welbeck-street).—4.30 P.M. Dr. H. Campbell: Cases of Hemiplegia.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Bloomsbury).—3.30 P.M. Dr. Ormerod.

WEDNESDAY (27th).—LONDON POST-GRADUATE COURSE.—Parkes Museum, Margaret-st., W., 4.30 P.M., Prof. A. Wynter Blyth: House Drainage.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Dr. Symes Thompson: Phthisis in Relation to Life Assurance.

WEST LONDON POST-GRADUATE COURSE (West London Hospital, W.).—Dr. D. Robinson: Metrorrhagia.

EVELINA HOSPITAL (Southwark-bridge-road, S.E.).—4.30 P.M. Dr. G. Carpenter: On Infant Feeding. (Post-Graduate Course.)

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-sq.).—5 P.M. Dr. Morgan Dockrell: Eczema.

THURSDAY (28th).—LONDON POST-GRADUATE COURSE.—Central London Sick Asylum, Cleveland-st., W., 5.30 P.M., Mr. Jonathan Hutchinson: Clinical Lecture.

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-sq.).—5 P.M. Dr. Morgan Dockrell: Tuberculosis of the Skin.

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Dr. Batten: Muscular Atrophy.

FRIDAY (29th).—LONDON POST-GRADUATE COURSE.—King's College, 3 to 5 P.M., Prof. Crookshank: Anthrax and Malignant Œdema.

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND, WHEN ACCOMPANIED BY BLOCKS, IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

A POINT IN THE WORKING OF THE "INFECTIOUS DISEASES NOTIFICATION ACT."

To the Editors of THE LANCET.

SIRS,—I wish to know if you will kindly inform me whether the port medical officer has any right to interfere with infectious cases attended by the practitioners of the town seven days after the vessel has entered the harbour, the port sanitary inspector having boarded the ship on the day of entry, and all on board declared well.

I am, Sirs, yours faithfully,

Whitehouse, Fowey, Cornwall, Oct. 4th, 1897. W. H. BOGER.

*** If a case of infectious fever was removed from a ship under the directions of a port medical officer, his duties as to notification and as to the patient would cease on such removal. If infectious disease occurred amongst persons who left the vessel seven days after the vessel entered the port, the port medical officer would notify them if met with on board, but not if they were living in the town—unless, indeed, he was attending them in his private capacity.—ED. L.

THE SINS OF THE "PERSONAL" COLUMN.

THE *Kerry Weekly Reporter* for Saturday last contains the following paragraph, and we are invited by a correspondent who sends us the paper to say what we think of it.

> "We are glad to be able to announce that Dr. Fitzmaurice's health is so much improved that we are authorised to state that he intends to resume his practice and will see patients at Cloghers. Dr. Fitzmaurice is also prepared to go to the country to visit cases as usual. Anyone wishing to consult Dr. Fitzmaurice at Cloghers can have a car, free of expense, from Vaughan's Hotel, Nelson-street."

We think very badly of it, but we are not anxious to blame the medical man as he may be the victim of mistaken editorial kindness.

SUGGESTIONS IN SERUM THERAPEUTICS.

To the Editors of THE LANCET.

SIRS,—Much has lately been written about the use of the antitoxic, protective, or curative serums, the sole method of using these serums being, as far as I am aware, by subcutaneous injections. It occurs to me that it might be possible for such serums to be administered with probable benefit in other ways than that of the hypodermic syringe method. Thus, they might be administered by the method of feeding in the same way as thyroid extract or creasote, or they might be applied more locally—that is, at or as near the seat of the microbic attack as possible. In typhoid fever, for example, the anti-typhoid serum could be administered in keratin-coated capsules, and in diseases the result of the streptococcus the anti-streptococcic serum might be tried by the mouth or sterile applications of the serum used locally. Apart from any direct anti-microbic action on the cocci it is reasonable to suppose that some antitoxin will be absorbed as well as toxin. Also in diphtheria, cholera, tetanus, tuberculosis, and pneumonia, the respective antidotal serums, or preparations, might be worth trying in some of the above-mentioned ways. If these serums administered by the mouth were found to act as well as they do when given hypodermically our patients would still be able to hold to their old belief in the "efficacy of a bottle of physic," though probably capsules of the serum for prophylactic or curative purposes would be the favourite method of taking them. One would like first to test, as far as possible, the practical value of these suggestions by experiments on the lower animals. Perhaps some colleagues from this brief letter may be induced to help in arriving at some conclusion as to whether or not these methods are of any use in assisting us in our struggle against the pathogenic bacteria and their toxins.

I am, Sirs, yours faithfully,

LACHLAN GRANT, M.D., C.M. Edin.,
Medical Officer, Gesto Hospital, Isle of Skye, N.B.

Oct. 16th, 1897.

A. B. C.—There is not any regulation of the General Medical Council enforcing the presence of an external examiner at the professional examinations of the Scotch Universities.

A. D. N.—We doubt the inference.

THE MEDICAL KNOWLEDGE OF FRENCH SCHOOLMASTERS.

ACCORDING to *Le Progrès Médical* the following "literary exercise" was recently set by a teacher in a Parisian *Lycée*: "1. A medical officer of La Charité Hospital having need of a human subject in order to carry out some medical experiments makes known his requirement to one of the sick attendants, whereupon the latter promises to let him have No. 46, who, he adds, has only a couple of hours to live. Give the conversation between these two persons in ten lines. 2. Such a speedy arrangement does not suit the medical officer, who is obliged to absent himself for twenty-four hours. Give his soliloquy in five lines. 3. A cordial administered to the afore-mentioned number, while *in extremis*, has so happy an effect that after a long sleep the lately moribund patient awakes convalescent. Give the comic disappointment of the attendant, together with the remarks of No. 46, in a dialogue of twenty lines. 4. The next day the medical officer comes to fetch his subject, but the attendant informs him that the dying man has changed his mind. Give the respective remarks in ten lines."

L.R.C.P.I.—It is not a violation of etiquette. We advise our correspondent to read "Difficulties under the Notification of Diseases Act," which is issued from our office, price 1s.

THROWING STONES AT TRAINS.

THE custom of throwing stones at trains is far too common, and in addition to its being almost impossible to arrest the idiots who do such things, the penalty provided by the law is far too light. A peculiarly sad accident arising from this insane habit was reported in the daily press on Oct. 19th as follows:

> "Ben Hitchen, a well-known express driver on the North-Western Railway, lies at Crewe unconscious. He had charge of the Scotch express to Carlisle, and when passing under Hartford-bridge, going at great speed, a stone hurled with much violence from the bridge struck him over the eye inflicting a fearful wound. Erysipelas has set in, and his condition is precarious."

Drivers of express trains are exposed to quite enough dangers from the nature of their ordinary work without having to undergo such risks as the one mentioned above. If the scoundrel who threw the stone is ever caught—though we are much afraid he will not be—he deserves the soundest flogging that a criminal ever had. In a case like this one not only is the driver's life imperilled, but the lives of all those in the train. We sincerely hope that the law may be amended so as to make it legal that any one who either throws any missile at a train, whether he hit it or not, or places an obstacle in the way of a train should be well flogged or birched in addition to a term of imprisonment.

IS TYPHOID FEVER COMMUNICABLE FROM CATS?

To the Editors of THE LANCET.

SIRS,—In sending the enclosed note I would ask if the absence of typical typhoid lesions in a cat's intestines might not be due to some difference in the arrangement of the lymph follicles. Mice have been found to be very susceptible to inoculations of the typhoid bacillus, but I do not know whether they are affected by swallowing it; if they are, then it is easy to see how a cat eating an infected mouse might have a diarrhœa capable of communicating typhoid fever to human beings, even if it caused no "typhoid" lesions in the cat itself.

I am, Sirs, your obedient servant,

A. E. BROSTER, M.R.C.S. Eng.,
Medical Officer of Health, Wirksworth Urban Sanitary District.

Wirksworth, Oct. 9th, 1897.

[ENCLOSURE.]

A brother and sister, aged eighteen and twenty-three years, have recently suffered from typhoid fever, the girl's illness beginning on Aug. 31st, and the boy's on Sept. 2nd. They were together at home between Aug. 3rd and 23rd, the girl for her holidays, the boy daily from his work from night to morning. During that period they went nowhere together, and home was the only place at which they had a common meal. Before Aug. 3rd and after Aug. 23rd the girl was away. The last case of typhoid fever notified in the district was in October, 1896, at the same house, the patient in that instance being the present patients' mother. The house, milk, and water-supply were examined in 1896 and again recently without the source of the illness being discovered. Between Aug. 3rd and 23rd a black kitten, aged about five months, suffered from continual diarrhœa and became very thin. It made most offensive messes about the house, which the girl cleared up. She and her brother were attached to the kitten, and both of them nursed it and cuddled it up to their faces. At the same time there were another brother and sister in the house who have been perfectly well, and both of whom, disliking the kitten, never touched it. After Aug. 23rd the kitten lost its diarrhœa and rapidly improved. When seen on Sept. 10th it appeared to be in good health. On that date it was killed with chloroform and forwarded to the Clinical Research Society, who wrote on the 13th that "as all endeavours to produce typhoid fever on the lower animals have been entirely without result we are pretty certain that our investigation will give negative results before we begin," and asking me to wire if I wished them to proceed. This I did. The report on Sept. 21st was as follows: "We made a careful post-mortem examination of the kitten. The organs and intestines were apparently healthy. There were no signs of hæmorrhages, enlarged spleen or ulcerations. The bacteriological examination showed that the blood and spleen pulp were free from organisms of any description. The cultivations from the fæces both from the small and large intestines contained no organisms which resembled in morphology or cultured reaction the bacilli typhi abdominalis." The history of the cases seems to suggest a possible infection from the kitten and the negative results of the post-mortem examination three weeks after its illness are hardly conclusive that the kitten's illness had no connexion with the outbreak of typhoid fever.

*** Before the suggestion implied in Mr. Broster's communication could be accepted it would be needful to explain the singular fact that in the previous year another inmate of the same house had typhoid fever. Does not this suggest some local sanitary defect which had not been remedied after the first illness, rather than infection through the kitten?—ED. L.

Conjoint.—There is no law in these matters, and our correspondent must be guided by his own private sense of what is right. We think that the affix in question ought always to be followed by the letters showing the university whence the degree is derived.

THE DANGERS OF THE CINEMATOGRAPH.

A CASE was reported in the papers recently of an explosion which happened in connexion with a demonstration of the cinematograph. It occurred in a Wesleyan chapel near Bradford, and the explosion appears to have been due to gas, but after the explosion "a large flame flashed to the ceiling" and instantly there was a great panic amongst the assembled crowd. Several people were injured, but happily the consequences were not worse owing probably to the presence of mind of the exhibitors, who cut off the gas from the apparatus, thus preventing the fire from spreading and avoiding an explosion of the gas in the cylinders. The fact of the large flame flashing to the ceiling leads to the conclusion that the celluloid film of which there are enormous lengths in the cinematograph had fired. We have already commented upon the dangers of celluloid in this no doubt entertaining form of popular show, and in the interest of the public it is imperative that something should be done to reduce the savage inflammability of celluloid. It was stated some time ago that celluloid had been made non-inflammable by impregnating it with certain chemical salts. If this be true some steps should be taken to insist upon the employment of this material in all public exhibitions.

"THE UNQUALIFIED ASSISTANT."

To the Editors of THE LANCET.

SIRS,—As the practitioner who employed the unqualified assistant referred to in your correspondent's (Mr. Tucker's) letter in THE LANCET of Oct. 16th, I think it only fair that all instead of a few of the facts only should be mentioned. In the first place I take every opportunity of showing to any of my patients who may at times be attended by my assistant that the case is under my supervision. In dozens of cases I have told patients that my assistant was not qualified even when they have not asked me. With reference to this particular case Mrs. Tucker showed me so very plainly that she did not want me, and told me that she was more than satisfied with my assistant, that I only saw her as seldom as possible. This is quite contrary to my rule, which is that my assistant shall see any cases as seldom as possible. He does not take 5 per cent. of any visits that come in, and I (not he) would have seen Mrs. Tucker's baby when last seen had she not called in my assistant while he was passing the door. The visit was not sent to the surgery at all. I have never directly or indirectly tried to make people believe that my assistant was qualified. His work consists practically entirely of dispensing and attending simple uncomplicated cases of midwifery. He has never attended any case of midwifery requiring instruments without my presence, when I have always done the operation. I am writing at this great length because I consider the matter a very important one, and also because I want to show that I as well as Mr. Tucker am anxious that people shall not be misled with regard to my assistant's lack of legal qualifications. I am, Sirs, yours faithfully,

Trelyon, Ilford, Oct. 15th, 1897. W. H. BEST.

Sea Side.—It is necessary that the holder of these appointments should be registered. He may or may not possess more than one qualification; this of course depends upon the date of registration.

SCARLET FEVER AND THE PRACTICE OF MIDWIFERY.

MR. BRAXTON HICKS has concluded an inquiry touching the death of the late Mrs. Emily Munday in June last, a week after her confinement. Mrs. Munday had engaged Mr. Whitehead to attend her, but when the time came he was laid up with scarlet fever, in the peeling stage, and his patients were attended by Mr. Bilham and by Mr. Don. Mr. Bilham for the most part attended to the midwifery cases. He lived in Mr. Whitehead's house while doing his work. The patient became ill three or four days after confinement and died in a week. Mr. Bilham seems to have had some doubt about the nature of the disease at first, but with two or three other gentlemen agreed that the case was one of scarlet fever complicated with heart disease of old standing. The husband became anxious to know the source of the infection, and stated that he could find none but Mr. Whitehead. Mr. Felix Kempster, police divisional surgeon, gave evidence. He had made the post-mortem examination, and declared death to be due to old heart disease, probably accelerated by scarlet fever. Asked if as a long-standing medical man he would attend a confinement case while also attending a scarlet fever case, he said, "it is a matter of everyday occurrence." In the end the jury found "unanimously that the death of deceased was due to heart disease, accelerated by scarlet fever, but that how the scarlet fever was contracted there was not sufficient evidence to show. The jury added, however, that they were of opinion that no medical man should attend midwifery cases while he had contagious complaints in hand." The coroner expressed his agreement. The solicitor for the husband expressed himself satisfied with the verdict, and hinted that further proceedings would be taken in another court. Under these circumstances it is well that we should abstain from much comment. Undoubtedly wherever it can be arranged it is desirable that attendance on midwifery and on contagious complaints, especially scarlet fever, should be dissociated; but in this urgent world it is not always possible without greater hardships than such attendance. It is, however, most imperative that the greatest possible care be taken in such circumstances to disinfect the person and to wear clothes that have not been exposed to the poison.

R. D. W.—No. The title of "Dr." implies the possession of a medical degree when assumed by a medical man.

"WARTY NIPPLES."

To the Editors of THE LANCET.

SIRS,—Will you allow me a small space to thank the medical brothers who have written me privately in response to my letter in THE LANCET of Oct. 2nd giving their experience and excellent advice about the treatment of warty nipples in a primipara nearing her accouchement? The condition does not appear to be so uncommon as my own experience had led me to believe.

I am, Sirs, yours truly,

W. J. COLLYER ADAM, M.B. & C.M. Glasg.

Acre-lane, Brixton West, S.W., Oct. 20th, 1897.

THE TREATMENT OF CORNS.

To the Editors of THE LANCET.

SIRS,—I should be grateful if any of my medical brethren could offer me a hint as to the treatment of corns. They are situated on the upper and outer surface of the little toes, are of the usual callous variety, and I think in each case surmount a bursa. For months I have found locomotion a pain and a grief in spite of my best endeavours to obtain relief from the many well-known and published lines of treatment. I have placed the making of my boots in skilful hands, yet I find it impossible to put my feet into them without a shudder. I may add that my general health is fairly good, and for many or most years of my manhood I have been a great pedestrian. Any suggestions will be thankfully received.—Yours very truly,

43, Welbeck-street, W., Oct. 20th, 1897. J. T. JONES.

MEDICAL MEN AS WITNESSES.

AT the Brecon Police court on Monday, Oct. 18th, a point was raised, as it has been raised frequently before, which is of some interest to the medical profession. A medical practitioner was called by a party to an action. The medical witness said he would decline to give evidence until an order was made that his fee should be paid into court, because his experience in such cases was that the fee was not paid after the evidence had been tendered. The presiding magistrate thought the medical man should take the same risk as other professional men—solicitors, for instance. A solicitor who was present remarked that solicitors took care to get their fees before going into court. The Clerk said a medical man had a perfect right to refuse to give evidence until paid. The Bench decided by a majority not to make an order in the case, and unless the medical man could make an arrangement with the parties who employed him they would have to do without his evidence.

ERRATUM.—An annotation in THE LANCET of Oct. 16th made reference to a paper by Dr. L. Guthrie which had appeared in *Brain*, and quoted the subject of the paper as "Psychro-Anæsthesia." This is a misprint for *Psychro-æsthesia*.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 21st, 1897.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb	Remarks at 8.30 A.M.
Oct. 15	29·50	S.W.	0·04	103	68	52	56	58	Fine
" 16	29·60	S.W.	...	104	68	56	56	59	Cloudy
" 17	30·01	S.W.	...	104	69	57	58	61	Cloudy
" 18	30·08	S.W.	0·13	91	66	59	57	61	Overcast
" 19	30·18	S.E.	...	84	65	58	58	59	Raining
" 20	30·47	W.	...	82	62	46	46	46	Foggy
" 21	30·56	E.	...	79	58	47	49	50	Foggy

During the week marked copies of the following newspapers have been received: *Alnwick Gazette, Bradford Observer, Eastern Morning News, South Wales Daily Post, Manchester Guardian, Bridgwater Independent, Lincolnshire Echo, Kingston News, Glasgow Herald, Western Morning News, Burton Chronicle, Cornish Telegraph, Manchester Guardian, West Sussex Gazette, Nuneaton Observer, Cheltenham Examiner, Times of India, Pioneer Mail, Middlesbrough Evening Telegraph, Bristol Mercury, Torquay Times, Science Siftings, Derby Daily Telegraph, Preston Herald, Grimsby News, Blackpool Gazette, Essex Telegraph, Wigan Examiner, Architect, Liverpool Daily Post, Colchester Mercury, Birmingham Mail, Beverley Guardian, Staffordshire Chronicle, Halifax Guardian, Wiltshire County News, Norfolk Daily Standard, Sheffield Independent, Newcastle Leader, Devon Gazette, Yorkshire Post, Builder, Bedford Times, Walsall Advertiser, Waterford Mirror, Bury Guardian, Sussex Daily News, Evesham Journal, North Wilts Herald, Worcestershire Chronicle, Wellingborough News, Leeds Mercury, Somerset County Herald, Herald of Wales, Dunstable Advertiser, Globe, Scotsman, Andover Advertiser, Bucks Standard, Mining Journal, Reading Mercury, Hertfordshire Mercury, City Press, Weekly Free Press and Aberdeen Herald, Local Government Chronicle, British Colonial Printer and Stationer, The Colonies and India Journal, Stratford-upon-Avon Herald, Surrey Advertiser, Local Government Journal, East London Observer, Kerry Weekly Reporter, Middlesex Chronicle, Bedfordshire Standard, Public Health, Journal (New York), South-Western Star, West London Press, Bexhill Chronicle, Formby Times, Manchester Evening News, West Middlesex Herald, Ampthill News, &c., &c.**

Communications, Letters, &c., have been received from—

A.—Dr. J. Althaus, Lond.; Messrs. Allen and Hanburys, Lond.; Messrs. Arnold and Sons, Lond.; All World Advertising Co., Belfast.

B.—Dr. Max Breitung, Coburg; Mr. W. H. Best, Ilford; Mr. Blackett, Lond.; Mrs. H. B. Black, Lond.; Messrs. Burroughs, Wellcome, and Co., Lond.; Messrs. Blondeau et Cie., Lond.; Messrs. Burgoyne, Burbidges, and Co., Lond.; Bibb, Lond.; Messrs. Bates, Hendy, and Co., Reading; T. B. Browne, Lond.; Messrs. A. Bishop and Sons, Lond.; Mr. Lennox Browne, Lond.; Mr. C. Birchall, Liverpool; Bridgwater Infirmary, Secretary of; Messrs. Brady and Martin, Newcastle-on-Tyne; B. and W., Lond.

C.—Dr. A. V. Clarke, Torquay; Consulting Surgeon, Lond.; Cor, Lond.; Cortland Wagon Co., Lond.; Messrs. Crossley, Moir, and Co., Lond.; Dr. J. Craig, Dublin; Mr. J. Cockerill, Lydd; Dr. Jessie Crosfield, Lond.; Mr. W. F. Clay, Edinburgh; Cornwall County Asylum, Bodmin, Clerk of; Messrs. Carnrick and Co., Lond.; Cheltenham General Hospital, Secretary of.

D.—Mr. F. Deas, Liverpool; Dr. T. O. Dudfield, Lond.; Messrs. J. Dewar and Sons, Lond.; F. A. Davis Co., Philadelphia, U.S.A.; Doncaster General Infirmary, Hon. Secretary of; Surgeon-Lt.-Col. S. L. Dobie, Dunain Park; Dr. A. V. Davies, Bridgend.

E.—Dr. D. G. Evans, Bettws-y-coed; Epsom College, Secretary of.

F.—Mr. H. Faulkner, Exeter; Mr. T. Finney, Aberaman.

G.—Dr. A. E. Giles, Lond.; Dr. J. F. Goodhart, Lond.; Great Eastern Railway Co., Lond., Continental Traffic Manager of; G., Lond.; Mr F. J. S. Gray, Sutton Coldfie Mr. E. A. Goodspeed, Shamrock, U.S.A.

H.—Mr. Huish, Lond.; Mr. T. Hopkin, Chester; Hospitals Association, Lond., Hon. Secretary of; Messrs. Hertz and Collingwood, Lond.; Messrs J. Haddon and Co., Lond.; Mr. J. Heywood, Manchester.

J.—Mr. H. M. Jordan, Lond.; Mr. F. B. Jessett, Lond.; *Journal of the American Medical Association*, Chicago, Editor of; Messrs. Jones Bros., Bristol.

K.—Mr. H. Kimpton, Lond.; Mr. R. Kimpton, Lond.; Herr S. Harger's Verlagsbuchhandlung, Berlin.

L.—Mr. J. L. Leckie, Pontypridd; Dr. J. F. Little, Lond.; Liverpool Stanley Hospital, Secretary of; Messrs. Lorimer and Co., Lond.

M.—Mr. J. Milne, Lond.; Midwives' Institute, Lond., Hon. Secretary of; Dr. C. Martin, Edgbaston; Dr. P. W. MacDonald, Dorset; Messrs. Maple and Co., Lond.; Mr. R. S. Marsden, Birkenhead; Dr. A. Miles, Leith.

N.—Dr. J. Niven, Manchester; Mr. A. Neve, Kashmir, India.

O.—Messrs. Olford and Son, Lond.

P.—Dr. Pye-Smith, Lond.; Messrs. Parke, Davis, and Co., Lond.; Practitioner, Lond.; Mr. Y. J. Pentland, Edinburgh.

Q.—Mr. P. W. de Quetteirlee, Jersey.

R.—Mr. Robin, Paris; Dr. J. S. R. Russell, Lond.; Messrs. A. Robb and Co., Lond.; Reginald, Lond.; Royal Cornwall Infirmary, Truro, Secretary of; Messrs. Rebbeck Bros., Bournemouth; Radnor Water Co., Montreal; Messrs. Robertson and Scott, Edinburgh.

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